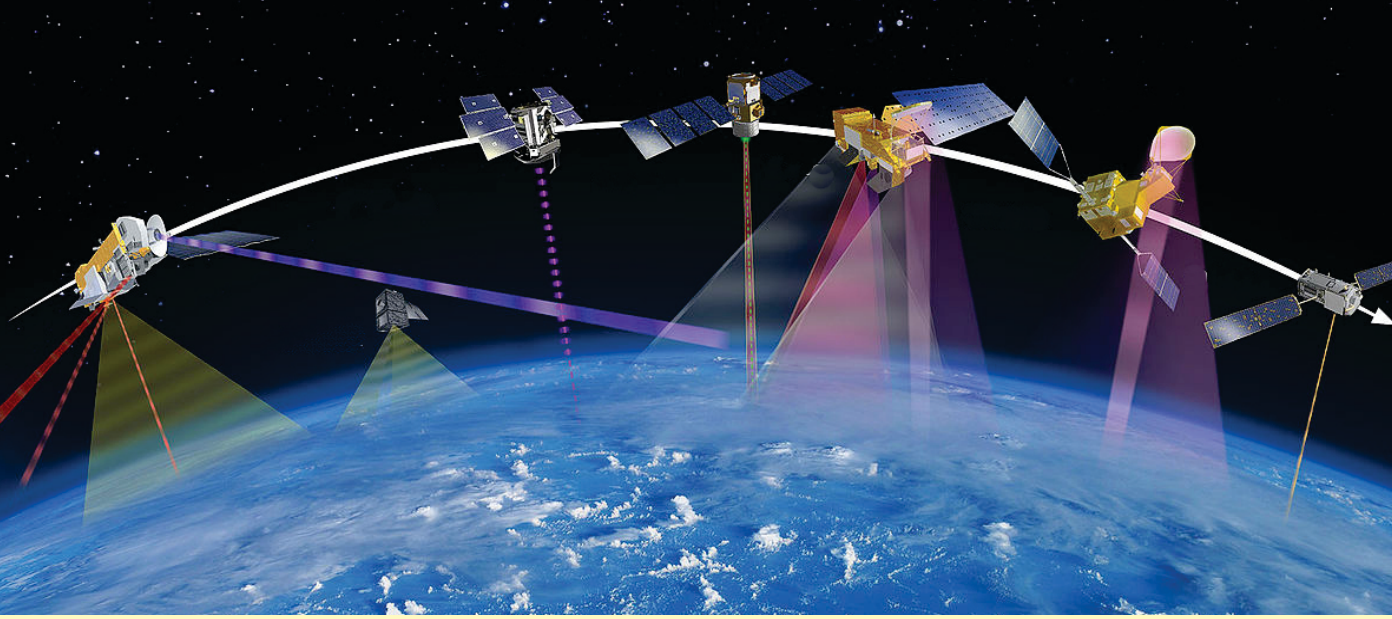

Training Module
Geography and Environment
Class X

West Bengal Board of Secondary Education
Department of School Education, Govt. of West Bengal
Samagra Shiksha Abhiyan
Planning and Development : Expert Committee,
Department of School Education

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Department of School Education
Govt. of West Bengal

Bikash Bhavan, Kolkata - 700091

West Bengal Board of Secondary Education

77/2, Park Street, Kolkata - 700016

July, 2020

The Teachers' Training Programme under SSA will be conducted according to this module that has been developed by the Expert Committee on School Education and approved by the WBBSE.

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FROM THE BOARD

In 2011 the Honourable Chief Minister Smt. Mamata Banerjee constituted the Expert Committee on School Education of West Bengal. The Committee was entrusted upon to develop the curricula, syllabi and textbooks of the school level of West Bengal. The Committee therefore had developed school textbooks from Pre-Primary level, Class I to Class VIII based on the recommendations of National Curriculum Framework (NCF) 2005 and Right to Education (RTE) Act 2009. In 2016 the new curriculum and syllabus of Geography and Environment for Class X came into effect and textbooks were developed accordingly. However, certain questions evoke in our minds: (i) How will the competencies of the learners modified, refined or improved in Class X? (ii) How far can the learners establish themselves as citizens with values and responsibilities at the end of Class X? (iii)How far can the learners go beyond the limits of academic disciplines to apply knowledge in their social life? And in trying to find suitable answers to these questions the Expert Committee developed the framework of the Constructivist methodology for knowledge construction.

Following the recommendations of Samagra Shiksha Abhiyan (SSA), the Govt. of West Bengal has arranged an orientation programme of Geography and Environment for Class X on the method of learning and evaluation. This 'Training Module' has been developed for the said orientation programme.

The Hon'ble Minister in Charge for Education, Dr. Partha Chatterjee, has enriched with his views and comments. We express our sincerest gratitude to him.

We hope that the orientation programme will be successful and have a lasting effect in the teaching-learning process of the future.

Kalyanmoy Ganguly

President
West Bengal Board
of
Secondary Education

July, 2020
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PREFACE

The Honourable Chief Minister Smt. Mamata Banerjee constituted the Expert Committee on School Education of West Bengal in 2011. The Committee was given the responsibility to review, reconsider and reconstitute all the aspects of the school curriculum, syllabi and textbooks. The new curriculum, syllabi and textbooks were developed based on the recommendations of the Expert Committee.

The school textbooks for all classes, from Pre-Primary level to Class VIII, were developed following the guidelines of NCF 2005 and RTE Act 2009. The textbooks for Class X were developed based on the new curriculum and syllabus.

Following the recommendations of Samagra Shiksha Abhiyan (SSA), the Govt. of West Bengal has organized an orientation programme on the method of learning and evaluation of Geography and Environment for Class X. This 'Training Module' has been developed for the said orientation programme.

The Hon'ble Minister in Charge for Education, Dr. Partha Chatterjee, has enriched us with his views and comments. We express our gratitude to him.

The State level Teachers' orientation programme on the methodology of learning and evaluation has been planned and executed in assistance with School Education Department, Govt. of West Bengal, West Bengal Board of Secondary Education and Samagra Shiksha Abhiyan (SSA). It is hoped that the 'Training Module', developed on behalf of School Education Department, Govt. of West Bengal, West Bengal Board of Secondary Education and Samagra Shiksha Abhiyan (SSA), will help in the effective implementation of the methodology of learning and evaluation.

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Contents

Samagra Shiksha Abhiyan (SSA)

Introduction

The Right of Children to Free and Compulsory Education (RTE) Act, 2009, seeks to ensure that children enjoy the benefits of the three aspects of Access, Equity and Quality in school education across the nation. To this effect, the Ministry of Human Resource & Development (MHRD) in line with the proposal of the Union Budget, 2018 -2019 has initiated the scheme of SAMAGRA SHIKSHA ABHIYAN (SSA). The scheme takes a holistic stance in treating school education from Pre-Primary to Class XII as a continuum by merging the erstwhile Sarva Shiksha Abhiyan and Rashtriya Madhyamik Shiksha Abhiyan schemes in one, unified whole.

Scope of SSA

The Samagra Shiksha Abhiyan (SSA) collates the three Schemes of Sarva Shiksha Abhiyan, Rashtriya Madhyamik Shiksha Abhiyan and Teacher Education.The SSA scheme aims at improving school effectiveness measured in terms of equal prospects for schooling and equitable learning outcomes. In harmonizing the different and major effectual factors of school education, the SSA scheme provides for the operational mechanisms and transaction costs at all levels, particularly in using state, district and circle level systems and resources, besides envisioning one comprehensive strategic design for advancement of school education. The shift in the focus is from project objectives to refining systems level performance and schooling outcomes which will be the emphasis of the SSA scheme, alongwith encouraging States towards improving quality of education.

Major Objectives of SSA

The holistic nature of the scheme envisages Universal Access, Equity and Quality, promotion of Vocational Education, refurbishment of the use of Soft or e-Materials in schools and strengthening of Teacher Education.

The major objectives of the scheme are summarized below:

- **Provision of Quality Education and enhancing learning outcomes of students**
- **Bridging Social and Gender Gaps in School Education**
- **Ensuring Equity and Inclusion at all levels of School Education**
- **Ensuring minimum standards in schooling provisions**
- **Support States in implementation of Right of Children to Free and Compulsory Education (RTE) Act, 2009**

Traditional Teacher-Training Methodology and Methodology proposed by NCFTE 2009: A comparative study

Comprehensive development of education requires, among other things, to make arrangements for teacher education. With this objective in view the National Council of Teacher Education (NCTE) organized an expert committee which composed a draft document after prolonged fruitful deliberation with a multitude of experts, professors of Education, departments of several universities, teachers, trainee-teachers, NCERT, SCERTs, DIETs and various NGOs. The draft was subsequently revised and published as a book. This important document is widely known as National Curriculum Framework for Teacher Education (NCFTE) 2009. This valuable document has served us as a beacon to compose and design the present teacher training module. While discussing the general principles of Teacher Education NCFTE 2009 states that "*.. we have realized the tentative and fluid nature of the so-called knowledge-base of teacher education. This makes reflective practice the central aim of teacher education. Pedagogical knowledge has to constantly undergo adaptation to meet the needs of diverse contexts through critical reflection by the teacher on his/her practices.*"

Comparison between the Dominant Current Practice and Proposed Process-Based Teacher Education Curriculum Framework

Dominant Current Practice of Teacher Education	Proposed Process-Based Teacher Education
Focus on psychological aspects of learners without adequate engagement with contexts. Engagement with generalised theories of children and learning.	Understanding the social, cultural and political contexts in which learners grow and develop. Engagement with learners in real life situations along with theoretical enquiry.
Theory as 'given' to be applied in the classroom.	Conceptual knowledge generated, based on experience, observations and theoretical engagement.
Knowledge treated as external to the learner and something to be acquired.	Knowledge generated in the shared context of teaching, learning, personal and social experiences through critical enquiry.
Teacher educators instruct and give structured assignments to be submitted by individual students. Training schedule	Teacher educators evoke responses from students to engage them with deeper discussions and reflection. Students

Dominant Current Practice of Teacher Education	Proposed Process-Based Teacher Education
packed by teacher-directed activities. Little opportunity for reflection and self-study.	encouraged to identify and articulate issues for self-study and critical enquiry. Students maintain reflective journals on their observations, reflections, including conflicts.
Short training schedule after general education.	Sustained engagement of long duration professional education integrated with education in liberal sciences, arts and humanities.
Students work individually on assignments, in-house tests, field work and practice teaching.	Students are encouraged to work in groups in classroom, learners' observations, interaction and projects across diverse courses. Group presentations encouraged.
No 'space' to address students' assumptions about social realities, the learner and the process of learning.	Learning 'spaces' provided to examine students' own position in society and their assumptions as part of classroom discourse.
No 'space' to examine students' conceptions of subject-knowledge.	Structured 'space' provided to revisit, examine and challenge (mis)conceptions of knowledge.
Practice teaching of isolated lessons, planned in standardised formats with little or no reflection on the practice of teaching.	School Internship – students teach within flexible formats, larger frames of units of study, concept web-charts and maintain a reflective journal.

source :

National Curriculum Framework for Teacher Education : Towards Preparing Professional and Humane Teacher, National Council for Teacher Education, New Delhi, 2009

Curriculum of 'Geography & Environment' (Class X)

Objective of studying Geography

Geography is the study about the relationship of the earth and man. The environment in which man resides is the place that controls his lifestyle. Geography also discusses about three realms of the earth: lithosphere, atmosphere and hydrosphere. The study of geography is even connected with other natural and social sciences. Economic progress also depends on Geography. Geographical environment affects agriculture, industry, commerce and other factors of economic growth.Geography also has an independent nature like the other disciplines of social science. Since Geography procures its contents from natural science as well as from social science, so Geography does not discuss only about logical human behavior,it also interprets natural phenomenon that are cause-effect related.

Objective of studying Geography and Environment

In the curriculum and syllabus of Geography for textbooks of class X, some items are apparently connected with others disciplines so that the learners can construct a holistic idea about them. The main objectives of this syllabus are:

1. Understanding the development of themes, concepts and terminologies of Geography.
2. Understanding the ways of human reaction in natural environment
3. Understanding the use and importance of natural resources and the development of human race in respect of the areas
4. Understanding the appropriate use of natural environment and the realizing the necessity for its conservation
5. Knowing about various resources of the environment
6. Developing concept about how the factors of environment and climate affecting our lifestyle
7. Developing concept of the natural and social environment of the learner and expanding outlook
8. Developing concept about the various geographical incidents that happen in our surroundings
9. Developing imagination, logic and critical thinking among the learners
10. Developing creativity and innovativeness among the learners
11. Understanding the diversities of India and its localities in relation with the population
12. Understanding the mutual dependence of the various regions of India including West Bengal

13. Developing skill to use map and globe, ability to draw and measure data on geographical instruments and the skill to apply the same
14. Helping the learner to acclimatize in various geographical conditions
15. Helping the learners to develop scientific outlook, decision making skill and innovative thoughts
16. And finally, helping to develop values

Curriculum of 'Geography& Environment': Main characteristics

- **Integrated Curriculum**

From the stage of planning and designing the curriculum and syllabus of 'Geography and Environment' for class VI, VII, and VIII, environment as a topic has been integrated with Geography. The main policies adopted in this respect are: learning about environment, learning through the environment and learning for the environment.

These three principles have been implemented in the syllabus of 'Geography and Environment' for class VI, VII and VIII.

This trend has also been followed in the syllabus of 'Geography and Environment' for class X. In the chapter "Exogenetic process and resultant landforms", learners will develop an idea of the features and varieties of landform caused by the work of river in different stages. The idea about the river bank erosion will help learners to take decision on which bank is suitable for house building and agriculture. In the chapter on 'Waste Management' learners will acquire knowledge about the sources of different types of waste obtained in nature and how to keep the natural environment clean and unpolluted. They will developed sound concept about waste management by the segregation of wastes of different sources. Thus, learning through environment has been implemented in various topic of different chapters of textbook and in this regard learners will be able to apply their knowledge in real life situation. Again, in "Hydrosphere" chapter on the concept on variation in quantity of water during tides and ebbs and its impact (shipping traffic, fishing etc.) on daily life reflects the principle of learning through environment similarly, the sub topic "Climate of India" which states about the concept of uncertanity of monsoon rain and its impact on supply of fruits and crops, sensex index, daily means basically reflect the principle of learning through environment.

In the topic 'Exogenetic process and resultant landforms', learners will be able to understand what kind of measures should be taken to prevent desertification. In same chapter

the comprehensive idea about the role of natural agents will facilitate learners to apply their acquired knowledge regarding the matter in real life situation if necessary. Such content highlights the principle of learning about the environment. In the subtopic 'soil and natural vegetation in India' learners will be able to asses the importance of forest and soil conservation to keep balance in natural environment as well as for the sake of environmental development.

Learners will get a clear view on how problems of urbanization and population density are responsible for todays economic and social environment of India. Therefore, the chapter 'India economic environment' which states about some remedial measures regarding the problems of urbanization and methods to conserve soil, natural vegetation or forest in India basically reflects the principle of learning for the environment. Similarly a discussion on the significance of impact of global climate change on Sunderbans highlights the principle of learning for the environment.

- **Investigative activity-based curriculum**

  The curriculum and syllabus of 'Geography and Environment' have been so designed as to generate in learners an attitude of seeking, investigation & query. While discussing the various themes in the curriculum, the general and background knowledge of the learners are considered for introducing the topic. Certain questions and topics are included in the textbooks that incite higher order thinking ability (HOTS) of the learners and also encourage them to investigate and apply in real life situation. Inquisitive questioning, concept mapping, drawing and interpreting line-diagrams, studying photographs, observation and practice of maps, topographical sheet and satellite imageries will encourage the learners in hands-on activities and also generate interest for the subject.

- **Learner-centric approach**

  Based on the theory of constructivism recommended by NCF 2005, the curriculum and syllabus of 'Geography and Environment' have been designed to be learner-centric. With the help of various attractive diagrams and photographs, the topics are presented such that they are directly or indirectly connected with the daily experiences of the learners. Various instances of daily life have been proposed to present before the introduction of main topic so that the subject becomes easily comprehensible.

- **Evaluation: an integral part of the curriculum**

  Evaluation is a continuous process in the light of constructivism. In this ongoing process of teaching-learning, the teachers judge the level of knowledge formed. In this respect, the

most significant issue is that the learner can be evaluated at any stage of the learning process. Analyzing the result of their assessment, the areas of pitfalls of the learners can identified and the teachers can henceforth decide on the approach of future lesson plans. According to the concept of Constructivism, evaluation has an integral relation to learning progress.Appropriate implementation of Internal Formative Evaluation (IFE) within the classroom will eventually do away with the conventional concept of assessment with pen & paper at the end of the teaching process.Six tools have been mentioned in this regard. They are: **Survey, Nature Study, Case Study, Creative writing, Model Making** and **Open Text book Evaluation.**The Internal Formative Evaluation should be conducted within span of the classroom. There is no need to go beyond the classroom. This enables the teachers to assess the advancement or lacuna of the learners even before the summative evaluation. So there is scope for adopting appropriate measures. Consequently, both the teachers and the learners get ample scope to be familiar with different methodologies and tools used for evaluating the knowledge or skills of the learners.

- **Use of ICT (Information Communication Technology) as learning aid**

Teaching-learning is like flowing river. Time and again various philosophical thoughts, learning methodologies, technologies etc. flow into the main drainage of teaching process like tributaries and make the methodology even more attractive and lively. Information Communication Technology (ICT) is an efficacious mode of learning in the present era.It opens up many windows of information to the learners. It helps the learners to explore geographical patterns and relationships through interpretation of data. After collecting the data, the learners can use ICT to organize as well as modify it for presentation. There is little doubt about its significant role in the daily use of modern man. It arouses curiosity and interest among the learners towards the study of Geography, both within the classroom and beyond. The advantages of ICT for the study of Geography are given below:

- ICT presents many multifarious facts on natural and human characteristics and process to the learners
- It provides varied experiences of different places and environment to the learners.
- It increases knowledge of Geography and investigative skills
- It enhances the skill of learners in geographical data analysis and spatial analysis

- It helps the learners to make models of geographical process, methods and environment
- It helps them to come in touch with environment through the use of email, webcams and video-conferencing
- It helps them to develop clear concept regarding maps
- Any topic of geography becomes easy and accessible through slide-shows and power point presentations (PPT). It provides useful data about the changing situation of the earth and its effect

ICT provides up-to-date data to the teachers and students. The importance of ICT for the topics of class is presented here:

If a video on origin of erosional landforms of glacier is presented before the learners they can easily comprehend the matter. Crevasses as a risk factor for the mountaineers in are high mountainous glaciated region. learners get a clear idea from a documentry regarding the aforesaid matter. Such videos or documentry make various topics easily comprehensible to the learners.

Care should be taken so that copyright laws are not violated for downloading and using information, pictures and power-point presentations of those websites.

The teacher's active role is desirablefor using ICT in the process of learning. Care should be taken that the teachers and the learners can collectively collaborate in co-creation and exploration for successful implementation of the concept of constructivism by the use of ICT.

Areas of Life Skill development

Some skills are required to successfully cope with the diverse demands and challenges of the individual and the society. These skills are in fact life skills. Life skills enable us to translate knowledge, attitude and values into actual abilities, i.e. what to do and how to do. So, Life skill education is necessary for holistic development of man. Here, holistic development implies development of various physical, mental and social abilities as well as of cognitive abilities.

The skills essential for developing oneself into a complete human being can be termed as Life skills. In fact, any skill essential to move ahead in daily life is actually a life skill. Some instances of life skills can be cited from our daily life: arranging different books at the study place in respect of disciplines so that the required book can be easily found whenever necessary; selecting proper food for healthy life style; in course of a conversation seeking suggestions from a stranger about visiting to an unknown place; boarding the exact bus for going to a specific place or selection of appropriate mode of transport etc.

The areas for discussion and subsequent development of probable life skills given in the following table are mere samples. Other life skills barring the ones mentioned here in the table below can be developed. It is possible to develop effective communication skill in almost all the areas of discussion mentioned in the table. Hence, it is not referred here.

Topic	Areas of discussion	Possible areas of life skill development
1. Exogenetic processes and resultant landfoms	Development of different types of landfoms due to enosional, transportational and depositional work of natural agents like river, glacier, wind etc.	Critical thinking, decision making ability
2. Atmosphere	Importance, depletion of ozone layer and its impact on entire biosphere.	Ability for application, deisuen making ability
3. Hydrophere	Origin of tide and ebb, differences in time among various tides and ebbs.	Critical thinking, ability for application, decision making ability
4. Waste management	Concept of waste obtained in surroundings and role of learmers in waste manegement.	Critical thinking, ability for application, decision making ability

Topic	Areas of discussion	Possible areas of life skill development
5. India	Controlling factors of climate, seasonal variation and impact of monsoon on agriculture of india.	Ability for application, decision making ability
6. Satellite imagery and topographical map	Uses of different types of scale on topographical map, importance and uses of satellite imageries.	Critical thinking, ability for application

In this context, it can be said that the study of geography not only develop the critical thinking skill, ability to take decision, ability to apply knowledge in real situation but also it helps banners to identify a particular event or situation and can take immediate decision based on their knowledge developed in the context of Geography for class X. It can be discussed with some of instances:

- Learners who have studied works of river in its different courses may give a clear idea about the suitability of rivers bank for house building and cultivation at lower course of river.
- The knowledge of crevasses as a risk factor for mountaineers in high mountaneous glaciated region may help learners to be aware while they travel in those areas at a later stage.
- The knowledge on causes of ozone depletion may aware learners to observe their surrounding environment and obstain them to use such products which tend to deplete the ozone layer.
- The concept of tide and ebb helps. learners to understand the proper timing of water transportation and the knowledge of tidal bore and its forecasting may help or facilitate them to be aware from this inciclent.
- The knowledge of waste management may help learners to prevent environmental pollution of their home as well as surrounding or locality.
- The knowledge of landforms, drainage system, climatic condition of India help learners in selecting time and place of travelling in future or at a later stage.

The incident occurred on 26 December 2004. Tili Smith is a ten year old British girl. Before setting off for Thailand on a vacation she learnt about Tsunami from her Geography teacher. As she was enjoying her vacation at Mai khao beach with her parents and sister, she saw the retreating waves and immediately alerted her mother of the possible attack of Tsunami. Soon all the people of Mai Khao beach of Fuket left the place and thus the lives of many tourists, hotel officials and other persons were saved.

Concept of equity in the curriculum of 'Geography and Environment'

Equity in education has two main aspects: provisioning and retention. Whereas the first creates enough potential for provision of educational facilities to weak learners, the second aims to create opportunities of success for differently-able learners and minimize the chance of failure of all students. Enhancement of equity level diminishes the chance of school dropouts, increases the scope to develop life skills and also creates new opportunities in the professional world. Hence, we need to explore about the possible measures to be adopted at different levels for ensuring equity:

- Providing equal opportunities in co-curricular activities to all learners of different race, religion, creed, and gender also to the differently-able.
- Providing equal opportunity to all learners to express opinions about class management in the classroom.
- Assessing the competency of all learners while setting question papers and maintaining balance in the evaluation process for proper reflection in their cognitive abilities.
- No special credit be given to any learner irrespective of creed, race, religion, gender or differently-able while evaluating answer scripts.
- During curriculum development, the contents of the curriculum should be such that they are acceptable to all.
- Alternative question papers would have to be designed for students with mental and physical challenges.
- Evaluation manual has to be drawn up in discussion with learners and faults detected through evaluation should be discussed later for correction.

Misconceptions in Geography

NCFTE 2009 for Teacher training observes that "Specific tasks related to how learner engage with school subject-content misconceptions need to be addressed through a rigorous study of disciplinary knowledge, besides a specific focus on content area literacy and tasks of writing observations and analysis for enhancing conceptual understanding." (NCFTE 2009, pg 38)

The learners develop knowledge through multifarious experiences. These experiences include the teacher's lecture, laboratory experiments, studying textbooks, homework assessments, peer learning, watching various audio-visual shows or films etc. Sometimes misconceptions grow through these mentioned modes of experiences.

Some samples of content-related misconceptions :

Topic	Selected portion of the topic
Exogenetic processes and resultant landforms	There is a general conception that erosional, transportational and depositional work of river occurs in upper, middle and tower course respectively. But this conception is not correct. Infact river's three phases of work comprising erosion, transportation and deposition occurs in its three courses while flowing from bounce to mouth.
Atmosphere	There is a general conception that water releasing from a wash basin or bathtub tends to sway anti-clockwise in the northern hemisphere and clockwise in the southern hemisphere. It is assumed that due to the effect of carioles force the water tends to sway. However, the time of water release, distance traversed and the velocity of release is so less that the effect of carioles force is negligible. Rather other controls like— speed of water release, shape of the sink or bathtub, person's manner of coming out from the bathtub etc—these have more impact than carioles force.
	Much of the solar energy that reaches the earth system passes through the atmosphere and is absorbed at the earth's surface. The earth then re-radiates energy. Because the earth is cooler than the sun, its energy is emitted at a longer average wavelength than that of the sun (wien's law). Most of the earths emitted energy is absorbed by atmospheric water vapour, water droplets, carbon dioxide and dust. It is suggested that this process should be called the "atmospheric effect." However, it is often impropriately referred to as the "greenhouse effect" This misnomer suggests that a greenhouse is warmed by

Topic	Selected portion of the topic
	the same process as the atmosphere, the implication being that greenhouse glass allows short-wavelength radiation to pass through but absorbs outgoing long-wavelength radiation. This was proven to be assentially false by R.W. Wood in 1909 (Fleagle and Businger 1980). Wood built two equal-sized model greenhouses, one conducted of glass and the other mocksalt, the later being transparent to both short and long wave radiation. When placed in the sun, both models reached about the same internal temperature level. This indicated that the greenhouses higher temperature in not primarily a result of absorption of outgoing long-wave radiation by glass. Rather, the primary reason a greenhouse or a car with closed windows is warmer than the external our is due to the reduction of mixing. When the sun heats the ground and the ground in turn heats the air, this warmed air may rise many thousands of feet. In a greenhouse or a car the mixing is limited by the walls and the roof and thus the heat is confined to a relatively small volume. This reduction in mixing is four to five times as important as the absoption of long-wave radiation by glass in explaining the temperature excesses found in a greenhouse (Fleagle and Businger 1980).
India economic environment	A few statistical information in regional geography, provided in text book are not compatible with recent dates. Sometimes such information are liable to mislead learners.

Source : Burton D. Nelson, Robert H. Aron & Mark A. Francek (1992) Clarification of selected Misconceptions in Physical Geography, Journal of Geography, 91:2, 76-80, DOI : 10.1080/00221349208979083.

Fleagle, R. G., and J. A. Businger. 1980. *An Introduction to Atmospheric Physics*, 2d ed. New York : International Geophysics Series, vol. 25. Academic Press.

Integration of certain contents of the curriculum of 'Geography and Environment' with Science and Social Sciences

NCFTE 2009 recommends that the "teachers need to be prepared to view subject content especially within the frames of the disciplines as well as with interdisciplinary disciplines" (NCFTE 2009, pg 25). Various disciplines of science like Zoology, Mathematics, Anthropology, Geology, Astronomy, Chemistry, Economics etc. have connection with Geography and likewise Geography has great influence on these subjects. The goal of human cognizance is to explore or discover new place or country, new idea or culture. Now, education is a dynamic discipline. So, the objective of the new curriculum of 'Geography and Environment' is manifestation of knowledge in an integrated form. In the textbooks on 'Environment and Geography' for class VI-VIII the contents have been presented in integrated manner with Zoology, Mathematics, Anthropology, Geology, Astronomy, Chemistry and Economics. In the new syllabus for class X, if certain topics are transacted with reference to the content areas of other disciplines, it will create interest among the learners and their knowledge will be comprehensive. However, in the summative evaluations, questions should not be set on such interface areas. The objective is to spread the outlook of the students.

Topic	Integration with other disciplines	Related subiect
Exogenetic processes and resultant landforms	The erosional power of the stream is proportional to the square of the velocity which means if the velocity is doubled, the erosional power of the stream increases by four times.	Physics
Atmosphere	Through condensation water vapowr is transformed into ice-crystal and from ice-crystal water droplets are formed. Then it falls as precipitation on earth.	Physics
Hydrosphere	Even though the sun has stronger gravitational pull than the moon, the moon's gravitational pull is much more effective or responsible to occur ocean tides on the earth's surface.	Physics
Waste Management	Microorganisms like bacteria, fungi break down complex biodegradable waste materials into simpler and recyclable compound.	Chemistry
India economic environment	Formation of Deccan trap region and utility of black soil of this region.	Geomorphology, soil science agriculture
Satellite imaginery and Topographical scheet	Use of different types of scale on Topographical map.	Mathematics

Expected Learning outcome of selected topic of 'Geography and Environment'

Lesson Unit	Topic	Sub topic	Previous knowledhe and class wise discussion		Expected Learning outcome with respect to the curriculum of Class X
			Previous knowledge	class	
2.	**Atmos-phere**	Concept of the atmosphere composition	List different elements of atmosphere	III	**The learners -** 1. will be able to discuss the importance of atmosphere. 2. will be able to list different elements of atmosphere. 3. will be able to explain the importance of different elements viz. gases, water vapour and dust particles.
		classification of atmosphere on the basis of composition and temperature	Describe different layers of the atmosphere	VI	4. will be able to classify different layers of the atmosphere on the basis of its composition and temperature. 5. will be able to describe characteristics of different lay-ers of atmosphere with the help of diagram. 6. will be able to explain the importance of ozone layer. 7. will be able to analyse the man-made and natural causes of ozone deplition.
		Heat temperature and global warming	Basic concept of Insolation and processes of heating atmosphere	VI	8. will be able to describe insolation and heat budget of the atmosphere with the help cliagram. 9. will be able to differentiate among various processes of heating of the atmosphere.

Lesson Unit	Topic	Sub topic	Previous knowledhe and class wise discussion		Expected Learning outcome with respect to the curriculum of Class X
			Previous knowledge	class	
2.	**Atmos-phere**		Determine annual avaerage temperature and rainfall from temperature rainfull data of 12 months of a particular place.	VI	10. will be able to calculate or determine the diurnal, monthly and annual range of temerature from a given table of temperature of a particular place and identify the type of climate of that place. 11. will be able to analyse interelatinship among various controlling factor of atmospheric temperature. 12. will be able to to describe heat belts on the basis of variation in incidence angle of the sun along the latitudes with the help of diagram. 13. will be able to identify which country is situated in which heatbelts in map or globe/ 14. will be able to describe the variation of water and landsurface temperature of the world by minute observing the isotherm map in the month of January and July.
			Basic idea about Green house gas	VI	15. will be able to write the role of greenhouse gas in earth's atmosphere and its consequences. 16. will be able to tell or write some effective means to reduce emission of greenhouse gases in his/her personal and social extent. 17. will be able to describe the negative effect of global warming on natural environment of the earth as well as entire biosphere.

Lesson Unit	Topic	Sub topic	Previous knowledhe and class wise discussion		Expected Learning outcome with respect to the curriculum of Class X
			Previous knowledge	class	
2.	**Atmos-phere**	Pressure belts and winds (planetary winds, local winds, sudden or periodic winds, cyclone, anti cyclone	Couses of difference in air pressure Distingish between high and low pressure of air Mention basic characteristics of Isobar lines	VII	18. will be able to mention different instrument to measure air pressure. 19. will be able to explain the importance of air pressure as an element of weather and climate. 20. will be able to explain the role of controlling factors of atmospheric pressure. 21. will be able to identify low and high pressure region by observing distributional pattern of Isobar lines on map. 22. will be able to explain the formation of seven pressure belts on earth with the help of suitable diagram.
			Describe relationship between pressure belts and planetary winds	VIII	23. will be able to explain relationship between pressure belts and planetary winds. 24. will be able to describe causes of shifting of pressure belts and its impact on global climate. 25. will be able to explain the formation of land and sea breeze as a periodic winds.

Lesson Unit	Topic	Sub topic	Previous knowledhe and class wise discussion		Expected Learning outcome with respect to the curriculum of Class X
			Previous knowledge	class	
2.	**Atmos-phere**		Understanding of variable, sudden and local wind	VIII	26. will be able to differentiate between land breeze and sea breeze. 27. will be able to analyse monsoon as a greater version of land breeze and sea breeze with reasons. 28. will be able to establish mountain and valley breezes relationship with temprature. 29. will be able to demarcate warm and cold local wind regions in the world map 30. will be able to differentiate between cyclone and anti cyclone. 31. will be able to describe characteristics of tropical and temperate cyclone. 32. will be able to give opinion on the effects of tropical cyclone in his state and country. 33. will be able to describe the interrelationship between jet stream and arrival and departure of monsoon in India. 34. will be able to identify the regions of tropical cyclone in world map or globe.
		Moisture and Pre-cipitation			35. will be able to explain different states of water in cycle in the hydrosphere, atmosphere and eithosphere.

Lesson Unit	Topic	Sub topic	Previous knowledhe and class wise discussion		Expected Learning outcome with respect to the curriculum of Class X
			Previous knowledge	class	
2.	**Atmos-phere**		To describe the reasons of cloud formation and different types of rainfall.	VIII	36. will be able to differentiate between absolute and relative. 37. will be able to differentiate between absolute and relative humidity. 38. will be able to mention different types precipitation. 39. will be able to analyse reasons of dew and fog are not being conciderd as precipitation. 40. will be able to classify rainfall. 41. will be able to describe the processes of origin of convectional. Orographic and Cyclonic rainfalls with suitable diagram. 42. will be able to explain the reasons of regional distribution of aforesaid types of rainfall.
			To describe the physical and socio economic conditions of five climate regions of the world	VIII	43. will be able to identify the climate characteristics and neuisphere location of a place with the help of temperature and rainfall graph of a place. 44. will be able to climate of a place with the help of monthly mean temperature and rainfall table. 45. will be able to identify the major climatic regions in the world map.

Lesson Unit	Topic	Sub topic	Previous knowledhe and class wise discussion		Expected Learning outcome with respect to the curriculum of Class X
			Previous knowledge	class	
5.	**India**	Water resource of India	To identify the course of few major rivers of India.	VI	**The learners -** 1. will be able to describe the course from source to mouth of major rivers of India. 2. will be able to differentiate between the rivers of north India and the rivers of South India. 3. will be able to explain the reasons of east flowing nature of most rivers in southern India and west flowing nature of Narmada and Tapi. 4. will be able to draw the course of major rivers with proper sign on the outline map of India. 5. will be able to describe the distribution of lakes, water bodies and canals. 6. will be able to describe the importance of lakes, water bodies and canals of human life with relevant examples. 7. will be able to describe the irrigation method adopted in India. 8. will be able to compare different methods of irrigation.

Lesson Unit	Topic	Sub topic	Previous knowledhe and class wise discussion		Expected Learning outcome with respect to the curriculum of Class X
			Previous knowledge	class	
5.					9. will be able to explain the adverse effects of over use of ground water as one of the major source of fresh water. 10. will be able to explain the objectives of multiple river valley projects. 11. will be able to describe the objectives and benefits of Damodar river valley project. 12. will be able to appraise the importance of water conservation. 13. will be able to assess the importance of watershed development and rain water conservation as a method of water conservation. 14. will be able to describe the pioneering role of Tamilnadu. 15. will be able to suggest ways for prevention of wasting of water and its conservation.

Instructional Design for Classroom transaction, Expected Learning Outcome : a brief discussion

Learning outcomes are expectations from the learners as to what they will be able to achieve or accomplish at the end of the teaching learning process. However, learning outcomes do not give an indication of the types of activities that will be undertaken during the duration of learning process. For that matter learning outcomes even do not indicate the methodologies that will be used by the teacher to discuss the matter with the learners. In this context teachers write down learning outcomes in the form of action verbs that are measurable so as to avoid any confusion or misinterpretation.

Learning objectives are what a teacher sets out to teach while outcomes are what is expected of students at the end of the course. In fact, outcomes should be identical to objectives if the content have been discussed in such a manner that the learners have grasped everything and are able to attain the level of proficiency that the teacher has desired. A helpful and frequently used resource while recording the students' learning outcome is Bloom's taxonomy of cognitive skills (See page-49).

NCF 2005 mentions the Interpretation Construction i.e. ICON model. This model refers to the seven stages of knowledge constructions. 5E model has been developed in line with the approach of constructivism in learning. According to this model learners construct new concept on the basis of previous knowledge. Each learning stage of 5E model starts with the English letter 'E' and the stages are Engage, Explore, Explain, Elaborate and Evaluate respectively. In this model learners and the teachers observe same type of activities, construct concept on the basis of previous knowledge and experience and continuously evaluate.

NCF 2005 highlights the Interpretaion Construction or ICON model and proclaims– "As opposed to the epistemic model of [teaching] the children which does not provide a great scope for their social experiences, the constructivist movement has re-emphasised the active role children play in acquiring knowledge. ...In the constructivist setting, the learners have autonomy for their own learning, opportunities for peer collaboration and support, occasions for learner generated problems that drive the curriculum, time for self-observation and evaluation and outlets for reflection. ...This perspective recognises the teacher as primarily a facilitator of learning. Rather than dictating what should be done, the facilitative teacher tends to act as a guide, providing resources for learners and enabling them to decide how to learn and why to learn. The constructivist teacher follows no rigid prescriptions for successful teaching, acts as a facilitator of meaning-making rather than leader of all learning."

Application of Constructivist Approach in the Learning process

Class X

Topic : India

Sub-topic: Soil of India

Learning Outcomes

Students :

- will be able to describe the types of soil in different regious in India.
- Will be able to explain the role of nature of rock, climate, relief, natural vegeta tion and organisms in the formation of soil.
- will be able to identify which soil is suitable for which crop production.

Phase	Presentation
Observation	The teacher may introduce the topic by discussing the observations of the learners that they experienced. S/he may present the topic by exhibiting the pictures of different types of soil and vegetation in natural environment, referring to the experience of some educational excursions or asking the learners some simple questions based on their experiences; e.g. (i) What is the landform of your locality? (ii) What is the colour of soil and its nature in your locality? (iii) What types of crops are cultivated in your locality?
Contextualization	The teacher refers to the discussion on *General introduction of West Bengal* (class V) and *The soil of West Bengal* (class IX) to consolidate their concept of the difference of soil and natural vegetation in different regions. The teacher will try to correlate their previous knowledge with the topic for discussion.
Cognitive apprenticeship	The teacher helps the learners to overcome their learning gaps or misconceptions that might have developed during their learning process. S/he asks questions; e.g. (i) Apart from the nature of rudimentary rocks, what are the other elements that have effect on the soil formation? (ii) What kind of soil is found in the surrounding areas of the river valleys of India?

Phase	Presentation
	(iii) What kind of soil is found in the hilly regions of India? During the discussion the learners may also ask questions, like Why is the soil black in colour in the Deccan plateau?
Collaboration	The learners will discuss in group and make a table of the different types of soil and their characteristics in different regions of India. They will cite examples and point them in the map of India.
Interpretation Construction	The learners will be able to correlate the climatic condition, nature of rocks, natural vegetation and activity of the living world with the soil through group discussion. They will try to consolidate their concept by referring to maps. The teacher will interfere, if required.
Multiple Interpretation	Here, learners get scope to expand and develop their concept. Activity-based tasks or questions help them to apply their concept; e.g. (i) able to identify different types of soil in their locality or school area (ii) able to spot the different types of vegetation in that soil condition (iii) able to analyse different types of soil formed in diverse geophysical and climatic condition (iv)able to realize the relation between soil condition and natural vegetation and crop production
Multiple Manifestation	The learners will develop sound concept about the diversity of soil in different regions of India through group discussion. They will be able to discuss the necessity and means for conservation of diversity. They will express their opinion on the relation of landforms, nature of rocks, soil and natural vegetation.

Five stages of Knowledge Construction through 5E Model

Topic: Exogenetic Processes and Resultant Landforms

Sub-topic: Work of Wind

Learning Out comes

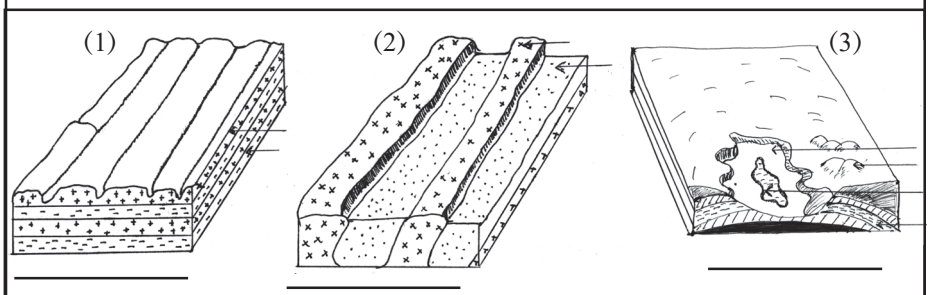
Students :

- will be able to identify hot desert regious in the world map.

- will be able to explain why wind woks as the domin out enogenetic force in the desert regious.
- will be able to explain the formation of landforms developed by the erosional and depositional works of wint with diagram.
- will be able to write the erosioual transportational and depositional processes of wind.

Phase	Presentation
Engagement	At the very outset it is important to arouse curiosity among the learners. The students can be engaged into different interactive discussions, asking questions, activities, photo exhibition etc. to make them interested about the topic. Here, the students try to correlate their background knowledge/previous experience with the new concepts that they would learn. This phase prepares the students for the later phases which are based on activities. Some pictures/photographs of some desert regions of various parts of the world can be demonstrated. Then the students can be asked— Where do you find such desert in your country? What will be the temperature here at different time of the day or year? What kind of natural vegetation is found in the desert? What is the type of soil in this region? The learners can be also involved into discussion by referring to tales, travelogues or novels composed on desert.
Exploration	Here, the learners try to form their own idea about the topic. Here, they get actively involved with the topic while working in groups. They learn by gaining experience through cooperative activity. Here, questions may be asked by referring to discussions on desert mentioned in their textbooks of class VI, VII and VIII: Identify the hot desert regions on the world map or globe. What may be the cause of formation of the deserts? The learners will locate different deserts and find out possible unnaturalness in their formation. The teacher will facilitate them with relevant information/ help them in experimentation. In trying to find the cause of sand formation (major element of desert) the learners will correlate with weathering (class IX) and erosional work of river (in class X). During classroom activity, the teacher may ask them— Which natural force is mostly observed in the desert region and why?

Phase	Presentation
Explanation	Here, the learners will explain what they have found through experimentation. The role of the teacher is of a facilitator. S/he will help them to rectify their errors, if required. They will identify their own misconceptions and develop knowledge. Students will develop concept about the role of different processes of wind erosion. They can narrate the source of different landforms caused by wind erosion. They will be also able to mention the features of different landforms.
Elaboration	Here, students will apply their newly developed ideas and try to correlate with the concepts of the topic. They may be engaged in some activities to assess their ability to apply the concepts already developed. For example— (i)They will able to differentiate between Zeugen and Yardang in respect of structure of bedrocks, alignment of bedrocks, slope of landform and its height. Similarly, they can identify the dissimilarities of landforms caused by wind erosion. (ii) They will be able to write their opinion about the change of landforms with time. (They have to mention about the wind direction, wind speed and the amount sand particles present in the air). After the discussion, they will be able to suffice the concepts with the help of the teacher.
Evaluation	The following task can be given to assess the concept of the learners at the fag-end of the class:

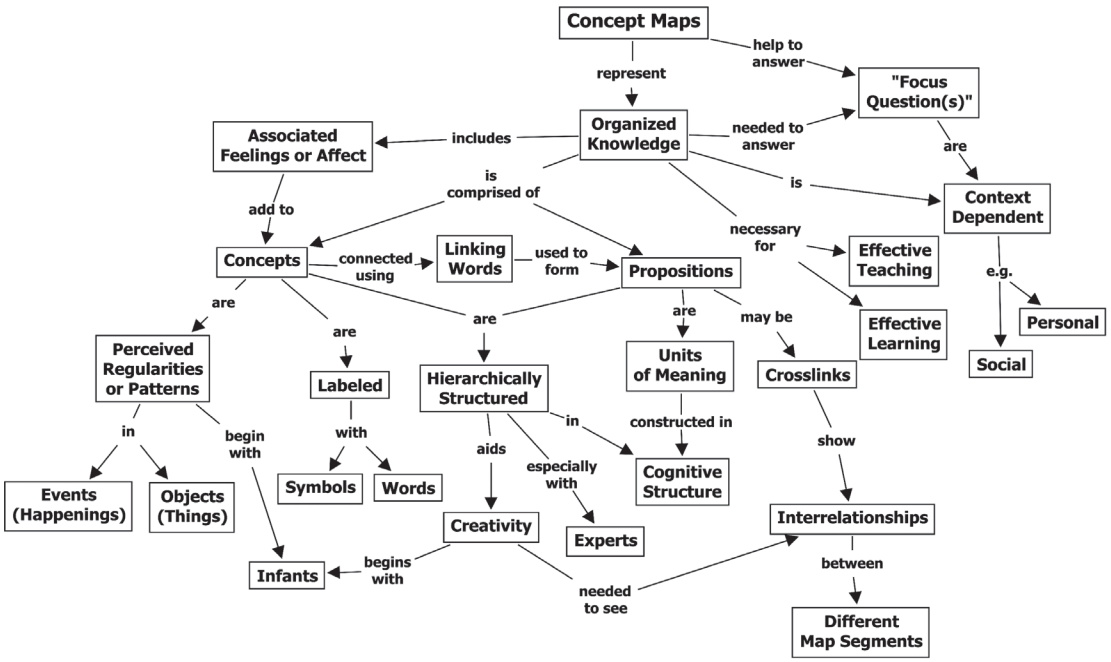


Identify the diagrams and show the wind direction with the help of arrows:

Landforms	Work of wind erosion	Main features
1.		
2.		
3.		

Concept Map :

Concept maps are graphical tools for organizing and presenting knowledge. They include concepts, usually enclosed in circles or boxes of some type, and relationships between concepts indicated by a connecting line linking two concepts. In concept maps, concepts are represented in a hierarchical fashion with the most inclusive, most general concepts at the top at the map and the more specific, less general concepts arranged hierarchically below. In early 1980, Joseph D. Novak, professor emeritus, Cornall University first introduced concept map as a tool of teaching strategy. Main characteristic of concept maps is that words on the line, referred to as linking words or linking phrases, specify the relationship between the two concepts. "Propositions are statements about some object or event in the universe. Propositions contain two or more concepts connected using linking words or phrases to form a meaningful statement. In the concept map below, two concepts i.e. 'Concept map' and 'Focus question' has been connected by the linking phrase 'help to answer' to make a meaning statement.



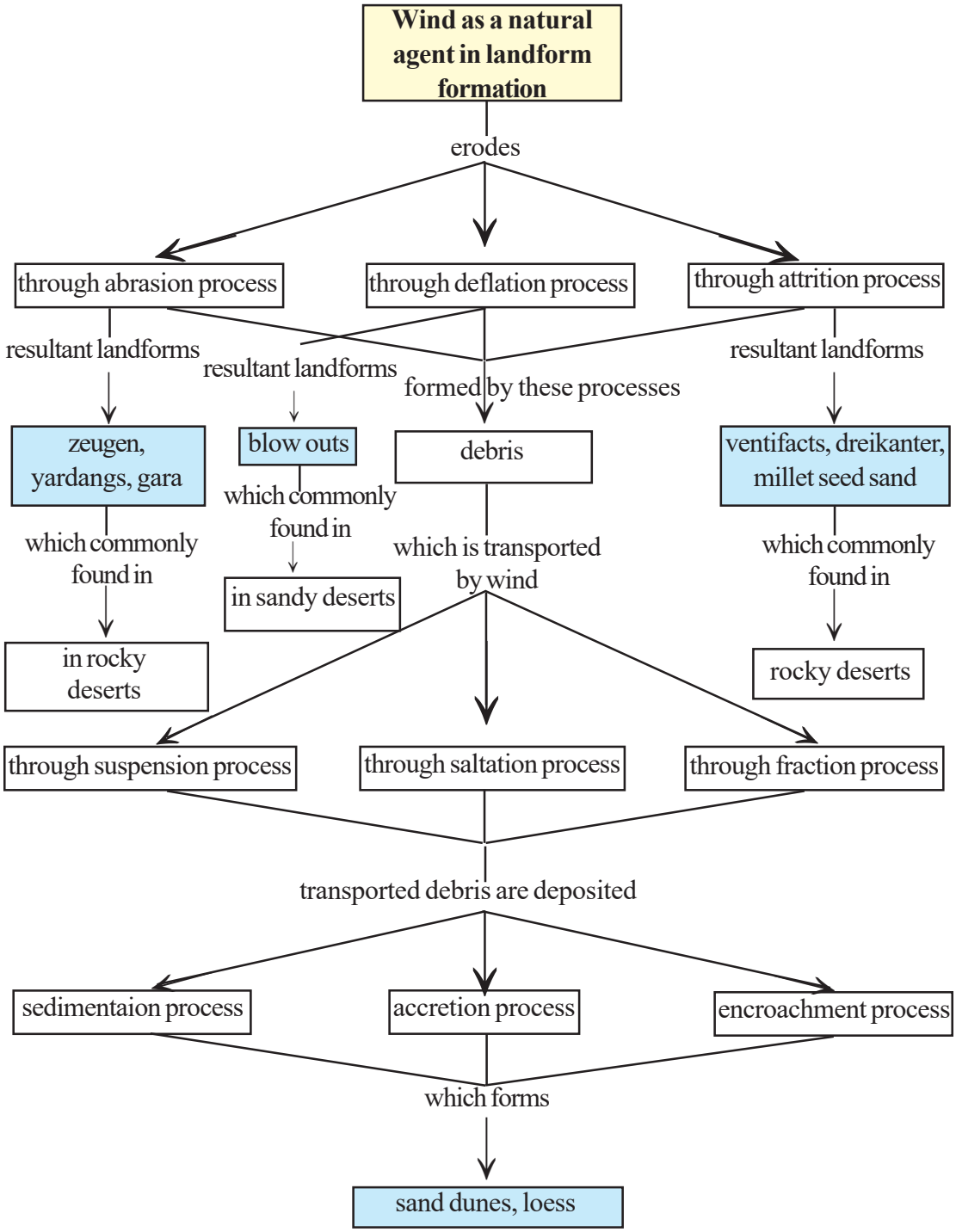
A concept map showing key features of Concept Map

(Novak & Canas, 2008)

Significance of concept map in classroom transaction:

- To present the complex concepts in age appropriate manner
- To judge the appropriate and misconceptions of the learners
- Appropriate useful tool for evaluation

Presentation of Aeolian landforms with the help of concept map



The stages of 5E and ICON model as mentioned in the training module may not always be carried out in a similar rigid graded manner during a classroom transaction. Let us take an example. The second phase of the 5E model is the Exploration stage. However, even after the Explanation phase the students may be involved again in Exploration, if necessary. Again, during a classroom transaction, learners may be engaged in activity at any time. Hence, the engagement should not restricted be only at the beginning of classroom transaction.

Similarly, in the third phase (Cognitive Apprenticeship) of the ICON model the teacher's guidance or facilitation is mentioned. But the teacher's help may be required at any stage of instructional design and s(he) will definitely help them. Besides, other models of instructional design may be adopted for classroom transaction. In fact, the teacher may plan suitable instructional design to facilitate the learners to achieve the expected learning outcome.

Source :

Novak, J. D. & A.J. Canas, The Theory Underlying Concept Maps and How to Construct and Use Them, Technical Report IHMC map Tools 2006-01 Rev 01-2008, Florida Institute for Human and Machine Cognition, 2008.

Novak, J. D., Concept Mapping : A Useful Tool for Science Education. Journal of Research in Science Teaching, Vol 27, No. 10, pp. 937-949 (1990).

Internal Formative Evaluation: Guidlines 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 2015. 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-IX in the academic session in 2015:

Internal Formative Evaluation (IFE) has to be conducted on the following six areas:

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

   Any three out of the six areas given above are to be choosen for Internal Formative Evaluation in a calendar year for each of the seven curricular subjects. Therefore, each term will have one area for evaluation on a particular subject. Subject teacher(s) are expected to correlate the modalities of Internal Formative Evaluation with the learning competencies of the concerned subjects. It may be noted that for a particular class. one modality is to be applied for one term. There should not be any repetition of a particular modality for a particular class in an academic year.

1. This programme of Internal Formative Evaluation (IFE) should be considered as an integral part of teaching-learning process for enhancement oflearning.
2. The IFE programme should be carried out in the classroom scenario in a stress-free manner before the respective surnmative evaluation 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 IFAare 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 herlhis own language.
- Exploring further- a case/event/phenomenon/situation/picture and produce 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 indepth 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 ofthe 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 oflearning. 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 the concepts or 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 iearning strategies vis-a-vis demonstrating clarity of concepts and their application underlined by aesthetic appreciation a 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 ofleaming 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 of meaning, to describe, select or retrieve information, events or ideas from texts and to deduce, infer or interpret information, events or ideas from texts.

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	Methodology	Subject-specific Example
1. Survey	• Collection of information of known and unknown component with specific context. • Determination of sequence of work and neccessary follow-up activities. • Unification of collected information. • Analysis of collected information and follow-up explanation. • Documentation of decision and evaluation.	• Collection of information. Gaining ability to analyse collected information and take proper decision.	• 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.	• Examples given in respective subject section.
2. Nature Study	• Observation of surrounding environment / incidences related to plants, animals, birds and human activities. • Data recording • Understanding of recorded data.	• Construction of observatory and critical attitude.	• 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.	• Examples given in respective subject section.

Name of the Method	About the Method		Process-Methodology	Example
	Learning Objective	Expected Learning Outcome	Methodology	Subject-specific Example
3. Case Study	• 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.	• Analysis of problem (individually/in groups) of related matter. • Finding solution • Gaining of ability to exchange problem-solving clues.	• Learners would solve a problem with respect to given situation / phenomenon / context / circumstances(individually / in groups)	• Examples given in respective subject section.
4. Creative Writing	• Written expression of creative thoughts after editing and extending.	• Learners will gain the ability to express creatively of concept and ideas about any particular incidence / subject.	• Learners will be able to construct imaginary conversation, paragraph or narrative etc.	• Examples given in respective subject section.
5 Model Making	• Concretise any abstract thought or concept in detail. • Explain a definite subject area through creative and experimental work.	• Ability to express vividly a particular concept with the help of particular example or instance.	• Learners will perform different activities like model-making, chart, time-table (two-dimensional / three dimensional structures)	• Examples given in respective subject section.
6 Open Textbook Evalution	• Identification of relevant information in context with particular incidence and its effective use. • Perceiving meaning of an incidence and working accordingly.	• 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.	• Learners will explore answers for given problems (application based and value based) on a given text.	• Examples given in respective subject section.

Internal Formative Evaluation : Sample & Evaluation Pattern

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 Learning Outcome :

- 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. **Alloted 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.]
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 defferent 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 Learning Outcome :

- 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 differents 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 Learning Outcome : 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 landfarms

- 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 Learning Outcome : 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

- 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 Learning Outcome : Clear concept building on the relavent 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 corelate 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 0.3ºC to 1.7ºC in the 21st century. Otherwise temperatures are slated to rise by 2.6ºC to 4.8ºC.

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 Learning Outcome : 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 X are given above. The teachers may change the subject or topic according to the cognitive level of his/her students.***

Summative Evaluation

Geography and Environment

Class - X

Syllabus

Topic : 1. Exogenetic processes and resultant landforms
2. Atmosphere
3. Hydrosphere
4. Waste management
5. India
6. Satellite imagery and Topographical map
- Map (India)

First Summative Evaluation : 40 marks
Internal Formative Evaluation : 10 marks

Topic : 1. Exogenetic processes and resultant landforms
5. India – Introduction, Physical environment

Second Summative Evaluation : 40 marks
Internal Formative Evaluation : 10 marks

Topic : 2. Atmosphere
3. Hydrosphere
5. India – Economic environment

Third Summative Evaluation : 90 marks
Internal Formative Evaluation : 10 marks

Topic : 4. Waste management
6. Satellite imagery and Topographical map
- Map (India)

N.B. : Topics chosen for the first and second summative evaluations are also to be included in the third summative evaluation.

Geography and Environment

Question pattern and distribution of marks for Summative Evaluation — class x

First Summative Evaluation

Full marks-40

Topic	Group - A		Group - C	Group - D	Group - E	Total
	MCQ type 1 mark	Very short answer type question 1 mark	Short answer type question 2 marks	Short explanatory answer type question 3 marks	Long answer type question 5 marks	
Physical Geography 1. Exogenetic processes and resultant landforms	1×4 = 4	1×4 = 4	2×2 = 4	3×1 = 3	5×1 = 5	20
Regional Geography 5. India – Introduction, Physical Environment	1×4 = 4	1×4 = 4	2×2 = 4	3×1 = 3	5×1 = 5	20
	08	08	08	06	10	40

N. B. :

Group-A : MCQ type – Information based and concept oriented questions to be set (four options to be provided).

Group-B : Very short answer type – should consist of • fill in the blanks • true/ false • column matching • one or two word answer.

Group-C : Short answer type question – Consists of what'/ 'where' type questions.

Group-D : Short explanatory answer type question – Compare/contrast/reasoning type of questions to be set (three points to be asked).

Group-E : Long answer type question – Preferably diagram-based questions from Physical Geography, 'how'/ 'why' questions from Regional Geography.

Geography and Environment

Question pattern and distribution of marks for Summative Evaluation — class x

Second Summative Evaluation

Full marks-40

Topic	Group - A		Group - C	Group - D	Group - E	Total
	MCQ type 1 mark	Very short answer type question 1 mark	Short answer type question 2 marks	Short explanatory answer type question 3 marks	Long answer type question 5 marks	
Physical Geography						
2. Atmosphere	1×3=3	1×3=3	2×1=2	3×1=3	5×1=5	16
3. Hydrosphere	1×2=2	1×2=2	2×1=2	3×1=3	–	09
Regional Geography						
5. India – Economic Environment	1×3=3	1×3=3	2×2=4	–	5×1=5	15
	08	08	08	06	10	40

N. B. :

Group-A : MCQ type – Information based and concept oriented questions to be set (four options to be provided).
Group-B : Very short answer type – should consist of • fill in the blanks • true/ false • column matching • one or two word answer.
Group-C : Short answer type question – Consists of 'what'/ 'where' type questions.
Group-D : Short explanatory answer type question – Compare/contrast/reasoning type of questions to be set (three points to be asked).
Group-E : Long answer type question – Preferably diagram-based questions from Physical Geography, 'how'/ 'why' questions from Regional Geography.

Geography and Environment
Question pattern and distribution of marks for Summative Evaluation — class x
Third Summative Evaluation / Selection Test

Full marks-90

Topic	Group - A MCQ type 1 mark	Group - B VSAQ 1 mark	Group - C SAQ 2 marks	Group - D SEAQ 3 marks	Group - E LAQ 5 marks	Group - F Map 1 mark	Total
Physical Geography 1. Exogenetic processes and resultant landforms 2. Atmosphere 3. Hydrosphere	1×6 = 6	1×9 = 9	2×2 = 4	3×1 = 3	5×2 = 10	—	32
Environmental Geography 4. Waste management	1×1 = 1	1×2 = 2	2×1 = 2	3×1 = 3	—	—	08
Regional Geography 5. India–Introduction, Physical environment, Economic environment	1×6 = 6	1×9 = 9	2×2 = 4	3×1 = 3	5×2 = 10	—	32
Satellite imagery and Topographical map 6. Satellite imagery and Topographical map	1×1 = 1	1×2 = 2	2×1 = 2	3×1 = 3	—	—	08
• Map (India)	—	—	—	—	—	1×10 = 10	10
	14	22	12	12	20	10	90

N. B. : Group -A : Total 14 questions to be given. [Total 6 questions to be given including 2 questions from each topic of Physical Geography.] There will be no alternative in this group.

Group-B : Total 26 questions to be set, out of which 22 to be answered. [At least 3 questions from each topic of Physical Geography to be given.]

Group-C : Total 12 questions to be given in this group, out of which 6 to be answered. [Total 4 questions at least 1 from each topic of Physical Geography and 4 questions from Regional Geography to be given. 2 questions each from Physical Geography and Regional Geography to be answered. 4 questions, 2 each from Environmental Geography and Satellite imagery and Topographical map to be given. 1 question each from Environmental Geography and Satellite imagery and Topographical map to be answered.]

Group-D : Total 8 questions to be given in this group. [1 out of 2 alternatives from each of Physical Geography, Environmental Geograpghy, Regional Geography, Satellite imagery and Topographical map to be answered.]

Group-E : Total 8 questions to be given in this group. [4 questions to be given at least 1 from each topic of Physical Geography and 4 questions to be given from Regional Geography. Total 4 questions including 2 questions each from Physical Geography and Regional Geography to be answered.]

Discussion on types of questions

Necessary things to be noted for framing different types of questions

- **Multiple Choice Question (MCQ)**

  There are mainly two parts in an MCQ: the stem and the options. Only one of the options should be absolutely correct while the rest of the options should be incorrect. There should be at least four options. Certain features has to be borne in mind to frame the stem-part of the question:

  (i) The major part of the information has to be included in the stem so that the options are stated with minimum words. It is necessary to state the main theme of the question in the stem portion.

  (ii) The language of the stem should be simple and unambiguous so that the learners have no difficulty in understanding the instruction.

  (iii) Care should be taken in the use of words in the stem. The words used in the stem should be from the known vocabulary of the learners.

  (iv) It is better not to use negative words in the stem.

  ♦ **Things to be noted for framing options:**

  (i) In every MCQ there should be four options. Apart from the correct option, the other three options are called 'Distractors'.

  (ii) There should be only one correct option among the four options.

  (iii) Each of the options should be independent. There should not be any overlapping in the options.

  (iv) The four options i.e. one correct option and three distractors should have similarity in respect of length, complexity and use of language.

  (v) 'All the options given above are correct' or 'None of the above options are correct'— such sentences should not be used as an option.

  (vi) The correct options of various questions should be arranged at random. That is, if in a question (a) is the correct option, then it is desirable that in the subsequent questions the correct option is (b), (c) or (d).

  ♦ **Things to be noted for using distractors:**

  (i) It should be borne in mind that the distractors should be apparently logical.

  (ii) The common errors and misconceptions of the learners may be given as distractors.

(iii) Sentences that are absolutely wrong should not be given as options.

(iv) Correct sentence but which is not the correct answer to the question — it is desirable to use such distractors.

- **Very Short Answer type questions (VSAQ)**

♦ **One word answer or answer in a sentence**

Certain things are to be kept in mind for framing these type of questions:

(i) The use of language in a sentence ought to be as simple and unambiguous as possible so that the learners do not have any difficulty in understanding the question.

(ii) The questions should be such that the answers would be short and precise.

♦ **Fill in the blanks**

Certain things are to be kept in mind for framing these type of questions:

(i) The use of language in a sentence ought to be as simple and unambiguous as possible so that the learners do not have any difficulty in understanding the question.

(ii) It should be noted that only one word should fill up each blank.

♦ **Identifying correct or incorrect sentence:**

Certain things are to be kept in mind for framing these type of questions:

(i) The use of language in a sentence ought to be as simple and unambiguous as possible so that the learners do not have any difficulty in understanding the question.

(ii) Extremely complicated and long sentences should be avoided.

(iii) It is better not to present more than one idea in a sentence.

♦ **Match the columns**

Certain things are to be kept in mind for framing these type of questions:

(i) An award of 1 mark should be provided for every correct relationship.

(ii) The number of items included in column B should be at least one in excess of the items in column A.

(iii) The items included in column A and B should be as brief as possible.

(iv) Two columns should be in one page.

- **Short Answer type questions (SAQ)**

  Certain things are to be kept in mind for framing these type of questions:

  (i) The use of language in a sentence ought to be as simple and unambiguous as possible so that the learners do not have any difficulty in understanding the question.

  (ii) Questions should be such that the answers should be in two or three sentences.

- **Long Answer type questions (LAQ)**

  Certain thing is to be kept in mind for framing this type of question:

  (i) The use of language in a sentence ought to be as simple and unambiguous as possible so that the learners do not have any difficulty in understanding the question.

Variety of questions based on the proposed blueprint

- **MCQ and Very Short Answer type questions**

  Questions can be set on the following items:

  (i) Factors
  (ii) Characteristics
  (iii) Process/method, mention of different landforms
  (iv) Occurrence
  (v) Functions
  (vi) Significance
  (vii) Use of terminologies related to Geography
  (viii) Identifying the dissimilar
  (ix) Identifying the correct pair
  (x) Writing the correct logical sequence
  (xi) Various applications of Geography
  (xii) Establishing interrelationship (e.g. between different elements of physical environment, between landform process and landforms etc.)
  (xiii) Example

- **Short Answer type questions and Long Answer type questions**

  Questions can be set on the following topics:

  (i) Characteristics

  (ii) Occurrence

(iii) Function

(iv) Role

(v) Significance

(vi) Difference/comparison

(vii) Cause-effect relationship

(viii) Explanation

(ix) Example

(x) Analytical question

(xi) Drawing diagrams

(xii) Questions related to diagrams

(xiii) Identification

(xiv) Making line diagram and asking questions on it

REVISED Bloom's Taxonomy Action Verbs						
Definitions	**I. Remembering**	**II. Understanding**	**III. Applying**	**IV. Analyzing**	**V. Evaluating**	**VI. Creating**
Bloom's Definition	Exhibit memory of previously learned material by recalling facts, terms, basic concepts and answers.	Demosntrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions and stating main ideas.	Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations.	Present and defend opinions by making judgments about information, validity of ideas, or equality of work based on a set of criteria.	Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.
Verbs	• Choose • Define • Find • How • Label • List • Match • Name • Omit • Recall • Relate • Select • Show • Spell • Tell • What • When • Where • Which • Who • Why	• Classify • Compare • Contrast • Demonstrate • Explain • Extend • Illustrate • Infer • Interpret • Outline • Relate • Rephrase • Show • Summarize • Translate	• Apply • Build • Choose • Construct • Develop • Experiment with • Identify • Interview • Make use of • Model • Organize • Plan • Select • Solve • Utilize	• Analyze • Assume • Categorize • Classify • Compare • Conclusion • Contrast • Discover • Dissect • Distinguish • Divide • Examine • Function • Inference • Inspect • List • Motive • Relationships • Simplify • Survey • Take part in • Test for • Theme	• Agree • Appraise • Assess • Award • Choose • Compare • Conclude • Criteria • Criticize • Decide • Deduct • Defend • Determine • Disprove • Estimate • Evaluate • Explain • Importance • Influence • Interpret • Judge • Justify • Mark • Measure • Opinion • Perceive • Prioritize • Prove • Rate • Recommend • Rule on • Select • Support • Value	• Adapt • Build • Change • Choose • Combine • Compile • Compose • Construct • Create • Delete • Design • Develop • Discuss • Elaborate • Estimate • Formulate • Happen • Imagine • Improve • Invent • Make up • Maximize • Minimize • Modify • Orginal • Orginate • Plan • Predict • Propose • Solution • Solve • Suppose • Test • Theory

Anderson, L.W., & Krathwohl, D. R. (2001). A taxonomy for learning,teaching, and assessing, Abridged Edition. Boston, MA: Allyn and Bacon.
Source : www.apu.edu > live_data > files > bloom

Learning outcome and types of questions

Sl. No.	Cognitive areas	Learning competency	Curricular areas	Types of questions	Sample questions
1.	Remembering	Identify	Atmosphere	MCQ	An example of local wind is – a) Loo b) Valley breeze c) Hurricane d) Monsoon Wind
2.	Remembering	Select	Hydrosphere	MCQ	A Cold current flowing over the oceanic surface is — a) Agulhas Current b) West Australian Current c) East Australian Current d) Brazil Current
3.	Remembering	Show	India	Very short answer type questions	Show the location of a laterite soil region in the outline map of India
4.	Remembering	Which	Waste Management	Very short answer type questions	The process of used things convert into a new material is called _____.
5.	Remembering	Name	Atmosphere	Very short answer type questions	What is that instrument that connects the main scale of the barrometer with the Vernier scale?
6.	Remembering	What	India	Short answer type questions	What is Doon?
7.	Remembering	Where	India	Short answer type questions	In which Himalaya Pir Panjal range is situated ? Write the name of a part of western India which is famous for Iron exporting.

Sl. No.	Cognitive areas	Learning competency	Curricular areas	Types of questions	Sample questions
8.	Remembering	Define	Satellite imagary and topographical map	Short answer type questions	What is Geo-Stationary Satellite ?
9.	Understanding	Infer	Atmosphere	Short answer type questions	Mention two conditions of origin of inversion of temperature
10.	Understanding	Classify	India	Short analytical answer type questions	Classify crops of India on the basis of uses and write one example of each crop.
11.	Understanding	Relate	India	Short answer type questions	What is the role of land-forms in tea production of India?
12.	Understanding	Contrast	Exogenetic processes and resultant landforms	Short analytical answer type questions	Mention three differences between Gorge and Canyon.
13.	Creating	Happen	Exogenetic processes and resultant landforms	Short analytical answer type questions	If the mangrove forest of the Sundarbans is destroyed in a wide spread way what would be its adverse effect on natural environment ? State your opinion.
14.	Evaluating	Justify	Atmosphere	Short analytical answer type questions	Why rainfall occurs in spain in winter instead of summer season ?
15.	Analyzing	Relationships	India	Short analytical answer type questions	How does unplanned urbanization of metro cities in India accelerate the problems of settlement and transport systme?

Geography

First Summative Evaluation

Class X

Model Question Papers

Full Marks : 40 **Time : 1 hr 30 min**

Group-A

1. Choose the correct answer from the given alternatives: [1×8=8]

1.1 The chief landform changing exogenetic force in desert and semi-desert region is –

a) river b) glacier

c) wind d) none of the above

1.2 The main reason of the 'I' shape of a canyon is —

a) vertical erosion of river

b) steep slope of land

c) dry desert region with scanty rainfall

d) lateral erosion of river

1.3 Problems of mountaineering occur due to the –

a) presence of pyramidal peak

b) presence of crevasse

c) presence of roches moutonnees

d) presence of esker

1.4 Example of landform formed by the combined work of wind and fluvial action is –

a) wadi b) dune

c) gara d) inselberg

1.5 The east of Andhra Pradesh is bounded by –

a) Telangana b) Karnataka

c) Bay of Bengal d) Tamil nadu

1.6 The reason of large numbers of port with natural harbour in the western coast is -

a) unbroken coast b) broken coast
c) presence of infertile soil d) abundance of lakes and lagoons

1.7 The reason of perennial flow of north Indian rivers is –

a) rivers are lengthy
b) formation of delta at the mouth of the rivers
c) rivers are fed by ice melt water and rain water
d) presence of alluvial plains in river basin

1.8 An example of deciduous tree is –

a) acacia b) mulberry
c) mehogany d) sundari

Group B

2.1 Write 'correct' beside correct statements and 'incorrect' beside incorrect statements: [1×2=2]

2.1.1 Tidal activities at the mouth of the river is favourable for delta formation

2.1.2 Karakoram range is a part of western Himalaya.

2.2 Fill in the blanks with appropriate words: [1×2= 2]

2.2.1 For the formation of Yardang hard and soft rock strata lies _____ with each other .

2.2.2 Deccan trap region is an example of _____ plateau.

2.3 Match the columns: [1×3=3]

Column A	Column B
2.3.1 Gara	a) depositional work of glacier
2.3.2 Moraine	b) abrasion of wind
2.3.3 Multipurpose river valley project	c) DVC

2.4 Answer in one or two words: [1×1=1]

2.4.1 Which is the major vegetation type in the active delta region of Bhagirathi-Hooghly river ?

Group C

3. Answer the following questions briefly: [2×4=8]

3.1 What are the factors controlling the height of snowline?

or

Write two landfroms formed by erosional work of river.

3.2 Mention two conditions for the dominance of wind erosion in the arid and semi-arid regions.

or

Metion two processes of glacial erosion.

3.3 How does Jhum cultivation accelerate soil erosion ?

or

Why Deccan platuae is known as a 'trap'?

3.4 Name two east flowing rivers of India.

or

Which winds are responsible for the Occurance of rainfall twice in a year in Tamil Nadu?

Group D

4. Explain the following questions briefly: [3×2=6]

4.1 Write difference between river valley and glacier valley.

or

Distinguish between Zeugen and Yardang.

4.2 Excessive use of ground water may bring disaster in human life .– explain with suitable reasons.

or

Write briefly how the Himalaya, situated in the Northen part of India influences the livelihood of native people.

Group E

5. Answer the following question: [5×2=10]

5.1 Discuss with examples how the global climate change is effecting sundarbans.

or

Explain the role of river as a part of water cycle.

5.2 Discuss the influence of monsoon on Indian climate.

or

Explain briefly how the nature of tropical evergreen vegetation and desert vegetation are influenced by the climate?

Geography

Second Summative Evaluation

Class X

Model Question Papers

Full Marks : 40 **Time : 1 hr 30 min**

Group-A

1. Choose the correct answer from the given alternatives: **[1×8=8]**

1.1 Rainfall is lowest in –

a) Equatorial climatic region
b) Mediterranean climatic region
c) Tundra climatic region
d) Monsoon climatic region

1.2 The layer included in Heterosphere is –

a) troposphere b) mesosphere
c) atomic oxygen layer d) stratosphere

1.3 The sign by which 3/4 part cloudiness indicated is

a)  b) 
c)  d) 

1.4 During neep tide earth and moon stand with each other at -

a) 60º angle b) 180º angle
c) 45º angle d) 90º angle

1.5 The Benguala current which flows along the west coast Africa is an –

a) upwelling cold current
b) downwelling warm current
c) downwelling cold current
d) upwelling warm current

1.6 One example of zaid crop is –

a) groundnut b) aus rice
c) wheat d) boro rice

1.7 One example of decentralised industry in India is –

a) jute b) shipping

c) engineering d) petro-chemical

1.8 The reason for less rail communication in mountainous region is –

a) shallow depth soil layer b) abundance of small bend

c) abundance of vegetation d) steep sloping land

Group B

2.1 Write 'correct' beside correct statements and 'incorrect' beside incorrect statements: [1×2=2]

2.1.1 The ships used to move along horse latitude by the influence of trade winds.

2.1.2 Kolkata is a sea port.

2.2 Fill in the blanks with appropriate words: [1×2= 2]

2.2.1 Sea breeze blows in the _____ .

2.2.2 During spring tides moon and sun are at _____ relative to the Earth.

2.3 Match the columns: [1×3=3]

Column A	Column B
2.3.1 Ahmedabad	a) North equalorial current
2.3.2 Earth's rotation	b) Outsourcing
2.3.3 Information technology industry	c) Textile industry

2.4 Answer in one or two words: [1×1=1]

2.4.1 Which climate indicates the convex shaped centre temperature line of temperature-rainfall graph and wet winter of a place in the northern hemisphere?

Group C

3. Answer the following questions briefly: [2×4=8]

3.1 'Water vapour is an important element in the atmosphere' - Give two arguments in support of the statement.

or

Mention two precondition is the for the occurance of cyclonic rainfall in tropical region.

3.2 Mention the importance of banks.

or

What is tides?

3.3 What is sustainable development ?

or

What is raw material based industry?

3.4 Mention two reasons of low population density in Arunachal Pradesh.

or

What is restoration port?

Group D

4. Explain the following questions briefly: [3×2=6]

4.1 Differentiate between tropical cyclone and anti-cyclone on three basis.

or

Distinguish between mediterrenean and tropical climate.

4.2 Write three reasons of tidal bore.

or

Explain briefly how the climate of coastal regions of continents are influenced by ocean currents.

Group E

5. Answer the following questions : [Drawing diagram is not compulsory for visually impared students]

5.1 Explain the role of latitude and altitude as a controlling factors of temperature variation of atmosphere.

or

Explain the relationship between pressure belts and planetary winds flows in tropical regions.

5.2 Discuss briefly why megacities in India are facing problems due to rapid urbanization.

or

Determine the importance of railways as a mode of transport on the livelihood of people of India.

Geography

Third Summative Evaluation

Class X

Model Question Papers

Full Marks : 90 **Time : 3 hr 15 min**

[15 minutes are alloted to read the question paper]

Group-A

1. Choose the correct answer from the given alternatives: **[1×14=14]**

1.1 An example of landform developed by aggredation process is —

a) Natural levee b) Esker

c) Seif dunes d) Waterfalls

1.2 The main reason of sinking of major portion of Ghoramara island is

a) Rise of sea level b) Cyclone and human interferance

c) Tide-ebb and tidal bore d) Submergence of sea floor and soil erosion

1.3 Number of pressure belts in the earth are –

a) 9 b) 5

c) 7 d) 8

1.4 Sunny weather prevails almost througout the year in

a) Monsoon climatic region b) Mediterranean

c) Tundra climatic region d) Equatorial climatic region

1.5 Banks are formed in –

a) Tropical region b) Equatorial region

c) Temperate region d) Poral region

1.6 The position indicates the minimum distance between the moon and the earth is known as —

a) Perigee b) Syzygy

c) Apogee d) Full moon

1.7 An infectious waste is —

a) Peel of vegetables b) Used syringe

c) Plastic packet d) A piece of metal

1.8 The highest peak of Himadri-Himalaya in India is —

a) Mt. Everest b) Godwin Austin

c) Sandakphu d) Kanchenjunga

1.9 The main wind flowing in India during winter is —

a) Cold and dry south-west monsoon wind

b) Cold and dry north-east monsoon wind

c) Cold and wet south-west monsoon wind

d) Cold and wet north-east monsoon wind

1.10 The soil found in largest part of India is —

a) Black soil b) Alluvial soil

c) Laterite soil d) Red soil

1.11 The largest irrigation system in India is —

a) Well and tube well b) Cannal

c) Fountain d) Wetland

1.12 The natural sea port of east coast of India is –

a) Kolkata b) Vishakapattanam

c) Holdiya d) Paradeep

1.13 An example of very low population density province is –

a) Jharkhand b) West Bengal

c) Manipur d) Panjab

1.14 .....

a) 1 : 2,50,000 b) 1 : 1,00,000

c) 1 : 50,000 d) 1 : 25,000

Group- B

2.1 Write 'correct' beside correct statements and 'incorrect' beside incorrect statements: [1×6=6]

2.1.1 The increase velocity of river or ocean currents is one of the responsible factors to develop delta.

2.1.2 Outwash palin is a landform which is developed by gradation process.

2.1.2 Ozone gas absorp ultraviolet ray of sun.

2.1.3 Warm current which flows along the east coast of Peru is known as El-Nino.

2.1.4 Compost manure is prepared from organic waste of municipality.

2.1.5 The longest mangrove forest is in the Sundarbans of West Bengal.

2.1.6 The satellite revolves in the same direction the earth rotates (West to east) is known as sun synchronous satellite.

2.1.7 An idea of total population of any country can be obtained from population density of that country.

2.2 Fill in the blanks with appropriate words: [1×6= 6]

2.2.1 Through evaporation _____ mixes in air.

2.2.2 Heated landsurface radiates heat as _____ wavelength.

2.2.3 The linear position of moon, sun and earth is known as _____.

2.2.4 _____ soil of Deccan trap region is suitable for cotton cultivation.

2.2.5 _____ collects energy emitted from different objects or substances of earth.

2.2.6 The running sand dunes in Rajasthan is known as _____.

2.2.7 Raw material having almost equal weight of finished product is known as _____ raw material.

2.3 Match the columns: [1×7=7]

Column A		Column B	
2.3.1	K_2	1)	Bacterial
2.3.2	Biodegradable	2)	Tornedo
2.3.3	Tropical cyclone	3)	Plankton
2.3.4	Banks	4)	Karakoram

2.4 Answer in one or two words : (any 6 questions): **[1×6=6]**

2.4.1 In which process patholes are formed on river bed in mountainous course of a river?

2.4.2 What is the name of southern most point of India's mainland?

2.4.3 In which plain of India the range of temperature is highest?

2.4.4 When does western disturbance appear in India?

2.4.5 What type of major natural vegetation is found in gangetic plain of West Bengal.

2.4.6 Which type of crop is sown in June-July and harvested in November-December?

2.4.7 Name two raw materials required in petro-chemical industry.

2.4.8 In topographical map which colour is used to show settlement.

Group- C

3. Answer the following questions briefly (note the alternatives): **[2×6=12]**

3.1 How does waterfall retreat occur?

or

How does Gara fomed?

3.2

Month	J	F	M	A	M	J	J	A	S	O	N	D
Temperature (°C)	18	22	27	32	35	31	30	29	28	27	24	20
Rainfall (m. m.)	11	30	35	60	142	290	410	350	280	140	26	15

Identify the climatic region and hemisphere from above table where the place is situated.

or

Who does density of sea water influence by salinity?

3.3 What is composting?

or

What is Eutrofication?

3.4 Why Southern plateau is known as Deccan trap?

or

How does strip farming prevent soil erosion?

3.5 Name one kharif and one ravi crop.

or

Name one pure raw material and impure raw material.

3.6 What do you mean by sun-synchronous satellite?

or

Write two characteristics of Topographical map.

Group D

4. Explain the following questions briefly (note the alternatives): [3×4=12]

4.1 'V' and 'I' shaved valley are formed in flow of a river in the mountains _____ explain logically.

or

Explain briefly how does cloud cover and precipitation are act as controlling factors of variation in temperuatre of atmosphere.

4.2 Delineate differences between bio-degradable and non bio-degradable waste.

or

Explain logically why waste management is needed.

4.3 How does Gangetic plain affect the livelihood of India?

or

How does reduce in water and expansion of desert region accelerate the soil erosion?

4.4 Write four characteristics of any two types of topographical map according to the use of scales.

or

Describe the process of creating satellite image from the data collected by artificial satellite in space.

Group E

5.1 Answer any two questions:

[Drawing diagram is not compulsory for visually impaired students]: [5×2=10]

5.1.1 Explain with diagrams the formation of two erosional landforms of wind.

5.1.2 Describe with diagrams how the flow of trade wind and westerlies are controlled by air pressure belt.

5.1.3 Describe with diagrams how the different positions of the earth, the moon and the sun control the formation of tides and ebbs.

5.1.4 Describe with diagrams the formation of convectional and orographic rainfall.

5.2 Answer any two questions: **[5×2=10]**

5.2.1 Describe how does seasonal changes of India controlled by monsoon wind.

5.2.2 Describe with examples how does geographical environment of a particular place play a role of controlling factors in crop production of that place.

5.2.3 Discuss the causes of centralization of iron and steel industary in Eastern India.

5.2.4 How does Indian Railway system play an important role in passengers and goods transportation.

Group F

6. Locate the following on the outline map of India with suitable name and symbols: **[1×10=10]**

6.1 Satpura range

6.2 Narmada river

6.3 Rainfall region twice in a year

6.4 A black soil region of western India

6.5 Rice producing region in eastern India

6.6 An engineering industrial centre of eastern India

6.7 Lowest population density region of India

6.8 An Administrative city of North India.

6.9 A port of eastern coast of India.

6.10 An International airport of western India.

or

[Only for visually impaired students]

6. Answer the following questions (Any ten) : **[1×10 = 10]**

6.1 From which state is Telangana formed ?

6.2 What is the name of the highest point of Meghalaya?

6.3 Write one tributary of the left bank of Ganges?

6.4 Over which state 'Andhi' blows?

6.5 Name one state of southern India where the red soil is found.

6.6 Which region is rhododendron the natural vegetation?

6.7 Write one winter crop.

6.8 Which crop needs shadow tree during cultivation?

6.9 Which is the densely populated Union Territory of India?

6.10 Name one centre of Information technology in West Bengal.

6.11 Write one mega city of eastern India.

6.12 Write the name of the Hitech port of India.

6.13 In which coast of India south - west monsoon enters first?

6.14 Write the name of one Doon Valley in Northern India.

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