آغا خان یونیورسٹی ایگزامینیشن بورڈ

AGA KHAN UNIVERSITY EXAMINATION BOARD

Secondary School Certificate Examination Syllabus

ENVIRONMENTAL STUDIES

CLASSES IX-X

(based on National Curriculum 2007)

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Secondary School Certificate
Examination Syllabus

ENVIRONMENTAL STUDIES

CLASSES IX-X

This subject is examined in the
May Examination session only

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PREFACE

In pursuance of National Education Policy (1998-2010), the Curriculum Wing of the Federal Ministry of Education has begun a process of curriculum reform to improve the quality of education through curriculum revision and textbook development (Preface, National Curriculum documents 2000 and 2002).

AKU-EB was founded in August 2003 with the same aim of improving the quality of education nationwide. As befits an examination board it seeks to reinforce the National Curriculum revision through the development of appropriate examinations for the Secondary School Certificate (SSC) and Higher Secondary School Certificate (HSSC) based on the latest National Curriculum and subject syllabus guidance.

AKU-EB has a mandate by Ordinance CXIV of 2002 to offer such examination services to English and Urdu medium candidates for SSC and HSSC from private schools anywhere in Pakistan or abroad, and from government schools with the relevant permissions. It has been accorded this mandate to introduce a choice of examination and associated educational approach for schools, thus fulfilling a key objective of the National Curriculum of Pakistan: "Autonomy will be given to the Examination Boards and Research and Development cells will be established in each Board to improve the system" (ibid. para. 6.5.3 (ii)).

AKU-EB is committed to creating continuity of educational experience and the best possible opportunities for its students. In consequence it offered HSSC for the first time in September, 2007 to coincide with the arrival of its first SSC students in college or higher secondary school. Needless to say this is not an exclusive offer. Private candidates and students joining AKU-EB affiliated schools and colleges for HSSC Part 1 are eligible to register as AKU-EB candidates even though they have not hitherto been associated with AKU-EB.

This examination syllabus exemplifies AKU-EB's commitment to national educational goals.

- It is in large part a reproduction, with some elaboration, of the Class IX and X National Curriculum of the subject.
- It makes the National Curriculum freely available to the general public.
- The syllabus recommends a range of suitable textbooks already in print for student purchase and additional texts for the school library.
- It identifies areas where teachers should work together to generate classroom activities and materials for their students as a step towards the introduction of multiple textbooks, another of the Ministry of Education's policy provisions for the improvement of secondary education (ibid. para. 6.3.4).

This examination syllabus brings together all those cognitive outcomes of the National Curriculum statement which can be reliably and validly assessed. While the focus is on the cognitive domain, particular emphasis is given to the application of knowledge and understanding, a fundamental activity in fostering "attitudes befitting useful and peaceful citizens and the skills for and commitment to lifelong learning which is the cornerstone of national economic development" (Preface to National Curriculum documents 2000 and 2002).

To achieve this end AKU-EB has brought together university academics, teacher trainers, writers of learning materials and above all, experienced teachers, in regular workshops and subject panel meetings.

AKU-EB provides copies of the examination syllabus to subject teachers in affiliated schools to help them in planning their teaching. It is the syllabus, not the prescribed text book which is the basis of AKU-EB examinations. In addition, the AKU-EB examination syllabus can be used to identify the training needs of subject teachers and to develop learning support materials for students. Involving classroom teachers in these activities is an important part of the AKU-EB strategy for improving the quality of learning in schools.

The Curriculum Wing of the Federal Ministry of Education has recently released new subject specifications and schemes of study which have been implemented since September, 2008. These documents are a major step forward towards a standards-related curriculum and have been welcomed by AKU-EB. Our current SSC syllabuses have been revised to ensure conformity with the National Curriculum.

We stand committed to all students entering the SSC course as well as those who have recently embarked upon the HSSC course in facilitating their learning outcome. Our examination syllabus document ensures all possible support.

Dr. Thomas Christie
Director,
Aga Khan University Examination Board
July 2009

1. Aims/Objectives of the National Curriculum (2007)[1]

The National Curriculum for Environmental Studies outlines the following aims and objectives:

Aims

The curriculum of environment studies at grade IX-X level aims to help individual students to:

- Promote awareness about ecological systems, their interrelationship and biodiversity and its role in nature
- Develop understanding, skills and attitudes necessary to address environmental issues
- Develop sensitivity and concern for the environment so that they can actively participate in efforts towards solving environmental issues of the community
- Examine the impacts of human intervention on ecosystems and investigate ways to minimize them
- Develop an attitude of responsible and productive citizenship including respect for the environment and commitment to the wise use of resources.

Outcomes

A statement of Outcomes relevant to each of the general aims is listed below. The sequence is in no particular order.

a. Awareness:

To help students acquire awareness and sensitivity to the total environment and its allied problems

b. Knowledge:

To help students acquire a basic knowledge and understanding of the environment active participation in its improvement and resolution of its associated problems

c. Participation (applying knowledge):

To provide students with an opportunity to be actively involved at all levels in working towards resolution of the environmental problems

d. Skills:

To help students acquire the skill for identifying and solving environmental problems

e. Attitude:

To help students acquire a set of values and feelings of concern for the environment and motivation for active participation in the activities regarding environmental improvement and protection

[1] Government of Pakistan (2007), National Curriculum; Environmental Studies Classes IX-X, Islamabad, Ministry of Education (Curriculum Wing)

2. Rationale of the AKU-EB Examination Syllabus

2.1 General Rationale

2.1.1 In 2007, the Curriculum Wing of the Federal Ministry of Education (MoE) issued a revised part-wise Scheme of Studies according to which the total marks for the SSC examination have been increased from 850 to 1100 from the year 2008 and onwards. All subjects are to be taught and examined in both classes IX and X. It is therefore important for teachers, students, parents and other stakeholders to know:

(a) that the AKU-EB Scheme of Studies for its SSC examination (Annex) derives directly from the 2007 Ministry of Education Scheme of Studies;
(b) which topics will be examined in Class IX and in Class X;
(c) at which cognitive level or levels (Knowledge, Understanding, Application and other higher order skills) the topics and sub-topics will be taught and examined;

2.1.2 This AKU-EB examination syllabus addresses these concerns. Without such guidance teachers and students have little option other than following a single textbook to prepare for an external examination. The result is a culture of rote memorization as the preferred method of examination preparation. The pedagogically desirable objectives of the National Curriculum which encourage "observation, creativity and other higher order thinking [skills]" are generally ignored. AKU-EB recommends that teachers and students use multiple teaching-learning resources for achieving the specific objectives of the National Curriculum reproduced in the AKU-EB examination syllabuses.

2.1.3 The AKU-EB examination syllabuses use a uniform layout for all subjects to make them easier for teachers to follow. Blank sheets are provided in each syllabus for writing notes on potential lesson plans. It is expected that this arrangement will also be found helpful by teachers in developing classroom assessments as well as by question setters preparing material for the AKU-EB external examinations. The AKU-EB aims to enhance the quality of education through improved classroom practices and improved examinations.

2.1.4 The Student Learning Outcomes (SLOs) in Section 3 start with command words such as list, describe, relate, explain, etc. The purpose of the command words is to direct the attention of teachers and students to specific tasks that candidates following the AKU-EB examination syllabuses are expected to undertake in the course of their subject studies. The examination questions will be framed using the same command words or the connotation of the command words to elicit evidence of these competencies in candidates' responses. The definitions of command words used in this syllabus are given in Section 7. It is hoped that teachers will find these definitions useful in planning their lessons and classroom assessments.

2.1.5 The AKU-EB has classified SLOs under the three cognitive levels Knowledge (K), Understanding (U) and Application of knowledge and skills (A) in order to derive multiple choice questions and constructed response questions on a

rational basis from the subject syllabuses ensuring that the intentions of the National Curriculum should be met in full. The weighting of marks to the Multiple Choice and Constructed Response Papers is also derived from the SLOs, command words and cognitive levels. In effect the SLOs derived from the National Curriculum determine the structure of the AKU-EB subject examination set out in Section 4.

2.2. Specific Rationale of the AKU-EB Environmental Studies Examination Syllabus

2.2.1 Environmental Education is one of the most powerful tools for providing awareness and knowledge and for modifying human behavior towards the environment. It is indeed our duty that a holistic civic awareness and sense of responsibility be laterally embedded into the curriculum for improving the quality of life and for producing effective policy makers of the future. The socio-cultural and socio-economic needs of our country demand the teaching of this subject especially at the age level of 14-16 years pertaining to classes IX-X.

2.2.2 Secondary education is a stage when modes of behaviour are taking shape and any change in attitudes at this level may affect the future life of students, at this level they will understand the values and attitudes that help in making environmental decisions and reflect on effective ways for modifying behaviour of individuals and groups for positive environmental outcomes and they will play the responsible role of a citizen.

2.2.3 The National Education Policy (1998-2010) objectives for Secondary Education include the following:

> "6.2.1 To prepare the students for the world of work, as well as pursuit of professional and specialized education;
> 6.2.5 To prepare and make available such teaching and learning material which makes learning rewarding and attractive.
> 6.2.6 To introduce a system of evaluation that emphasizes learning of concepts and discourages rote memorization." (p.41)

2.2.4 In line with national policies and the National Curriculum statement AKU-EB has developed this examination syllabus in Environmental studies to provide the opportunity for students to understand the structure, function and diversity of natural ecosystems on this planet and evaluate the impacts of human activities on them. It provides ways and means to examine strategies to maintain and protect the ecological health of the environment while meeting the needs and desires of human populations.

2.2.5 The content has been elaborated in terms of specific learning objectives that will help to broaden students' conceptual understanding and learning of the associated challenges directly relevant to meeting the challenges of 21st century

2.2.6 Finally the SLOs encourage both teachers and students to concentrate on understanding and application rather than recall and rote memorization. As a further aid to this reorientation towards best practice, the sequence of the main topics has been changed to facilitate a deeper and more coherent understanding.

3. Topics and Student Learning Outcomes of the Examination Syllabus

SSC Part I (Class IX)

Topics		Specific Learning Outcomes		Cognitive Level[2]		
				K	U	A
1. Nature of Environmental Studies		**Candidates should be able to:**				
1.1	Introduction to Environmental Studies	1.1.1	state the meaning of environment with examples;	*		
		1.1.2	explain "environmental studies" as an interdisciplinary subject;		*	
		1.1.3	list the outcomes of studying environmental studies;	*		
1.2	Need and Importance of Environmental Studies	1.2.1	describe the need and importance of environmental studies as a powerful tool to modify human behavior towards the environment;		*	
		1.2.2	list concepts from other disciplines that are related to environmental studies;	*		
1.3	Historical Background of Environmental Education at Global Level	1.3.1	describe in brief the historical perspective of environmental education;		*	
		1.3.2	list some important organizations (UN agencies, CSOs, EPA, and the government departments) that are working for environmental protection;	*		
1.4	Environmental Education and Management at National Level	1.4.1	list the careers that students of environmental studies can adopt at national level;	*		
		1.4.2	describe some of the actions taken towards environmental education and management at national level.		*	

[2] K = Knowledge, U = Understanding, A= Application (for explanation see section 7: Definition of command words used in Student Learning Outcomes and in Examination Questions).

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				K	U	A
2. Our Planet - Earth		**Candidates should be able to:**				
2.1	Earth-Part of Solar System	2.1.1	describe briefly the solar system and the importance of earth in the solar system;		*	
2.2	Earth-only Planet to Support Life	2.2.1	describe the physical features which enable earth to support life;		*	
2.3	Introduction to Spheres: Atmosphere	2.3.1 2.3.2 2.3.3 2.3.4 2.3.5	name the spheres of the earth; name different layers of the atmosphere; describe the thickness of the layers of atmosphere; describe characteristics of two lower layers i.e. troposphere and stratosphere; describe the composition of air;	* * 	 * * *	
2.4	Hydrosphere	2.4.1 2.4.2 2.4.3 2.4.4 2.4.5	describe the importance of hydrosphere and its two major types; discuss characteristics of sea water and fresh water; list sources of fresh water; explain the importance of fresh water as a valuable resource for living organisms; discuss and make a list of water saving practices at home, mosque, mohalla / locality;	 * 	* * * *	
2.5	Lithosphere	2.5.1 2.5.2 2.5.3	define lithosphere; explain lithosphere; describe the importance of lithosphere.	*	 * *	

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				K	U	A
2.6	Biosphere	2.6.1 2.6.2 2.6.3	define biosphere and biomes; recognise and give examples of the hierarchy of the biological entities of the biosphere (organisms, populations, communities, ecosystems, and biosphere); discuss how changes in the environment might affect the organisms.	*	 * *	
3. Ecosystem		**Candidates should be able to:**				
3.1	Introduction to Ecology	3.1.1	define ecology as the study of the interactions between organisms and their environment;	*		
3.2	Levels of Ecological Organizations	3.2.1 3.2.2	describe the levels of ecological organization in terms of population community ecosystem and biomes; classify organisms as producers, consumers and decomposers;		* *	
3.3	Ecosystem	3.3.1 3.3.2 3.3.3	define ecosystem; explain the position of human beings as a part of ecosystem; describe the structure and functions of ecosystem;	*	 * *	
3.4	Components of Ecosystem	3.4.1 3.4.2	define biotic and abiotic components; classify the components of ecosystem into abiotic and biotic with examples and describe how matter and energy move between these;	*	 *	
3.5	Interaction in Ecosystem (Feeding and Non Feeding Relationships)	3.5.1 3.5.2 3.5.3 3.5.4	draw food chains and food web on the basis of the observations of a pond's or garden's ecosystem; describe the feeding relations among the biotic components of the ecosystem, in terms of tropic levels, food chains and food webs; explain important non-feeding relationships in the ecosystem with examples; explore the living organism of a pond, lake or a garden and investigate the interrelationships and interdependence of organism;		* * * 	 *

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				K	U	A
3.6	Flow of Material and Energy in Ecosystem	3.6.1 3.6.2	explain the flow of materials and energy in the ecosystem; draw energy flow diagram in ecosystem;		* *	
3.7	Balance in Ecosystem	3.7.1 3.7.2	explain how natural ecosystems are self-regulatory and self sustained; deduce that although natural ecosystems are stable yet they have limited capacity to withstand disturbances;		*	*
3.8	Habitat	3.8.1	identify animals or plants indigenous to an environment by examining different pictures;	*		
3.9	Major Aquatic Ecosystem and Biomes	3.9.1 3.9.2	locate major biomes on a chart; draw simple sketches of water cycle, carbon cycle and nitrogen cycle;	*	 *	
3.10	Human Interventions in the Natural Ecosystem	3.10.1 3.10.2	identify some human activities that can disturb the natural balance; discuss human activities which have direct or indirect effects on the ecosystem.	*	 *	
4. Population Growth, Development and Environment		**Candidates should be able to:**				
4.1	History of Human Population	4.1.1 4.1.2 4.1.3	describe, in terms of figures, the history of human population in global and national perspective; describe briefly the growth in the population of Pakistan from 1947 to date; draw a graph of the history of human population growth, giving the years and the population numbers and predict the world population in the next 50 years;		* * *	

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				K	U	A
4.2	Human Population Growth and its Consequence	4.2.1	describe the terms; linear and exponential population growths;		*	
		4.2.2	identify how the high growth of population has an impact on depletion of natural resources thus reducing carrying capacity;	*		
		4.2.3	discuss in groups the topics relating to high growth of population and its effect;		*	
		4.2.4	identify natural and social factors that limit population growth such as carrying capacity and family planning;	*		
4.3	Population Dynamics	4.3.1	define population dynamics (birth rates, death rates, growth rates, density, migration and urbanization, exponential growth, concept of doubling time);	*		
		4.3.2	examine the factors affecting human population dynamics;			*
		4.3.3	explain the following 'statistical' attributes of population; natality (birth rates) mortality (death rates),age distribution and gender ratios and rural urban migration);		*	
		4.3.4	explain how populations grow or decline through the combined effects of births and deaths, and through emigration and immigration;		*	
		4.3.5	state the influences of various factors, such as levels of affluence and education, health care, child labour, employment of women, costs of raising children religious beliefs, cultural norms and lack of leisure activities on population growth;	*		
		4.3.6	describe the concepts of carrying capacity and of doubling time and its usefulness to demonstrate the long-term effect of a growth rate;		*	
		4.3.7	explain the concept that number of "human beings" increases at a geometric growth rate but food supply increases at an arithmetic growth rate;		*	

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				K	U	A
4.4	Population Projection	4.4.1	state the phenomenon of population projection;	*		
		4.4.2	explain how the population projections are useful for planning development strategies;		*	
		4.4.3	describe how demographers compute the population projections;		*	
		4.4.4	interpret charts/ graphs showing year-wise increase in the population of province / Pakistan as well as comparison of population of various big cities;			*
4.5	Relationship between Population Growth, Development and Environment	4.5.1	identify the major causes of the population explosion;	*		
		4.5.2	list the ecological consequences of continued population growth;	*		
		4.5.3	determine the relationship between population and economic growth;		*	
		4.5.4	determine ways and means to address over population;		*	
		4.5.5	describe the links between human population, sustainable development and the environment;		*	
		4.5.6	describe the role of agriculture in relation to human population growth;		*	
		4.5.7	discuss in groups the relationship of population growth and development in the context of creating healthy environment;		*	
		4.5.8	interpret charts/graphs showing population projections from the years 1999-2010 to discuss apprehensions regarding sustainable development;			*
		4.5.9	discuss the role of mass media for developing awareness about population welfare and quality of life;		*	

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				K	U	A
5. Air, Water and Land Pollution		**Candidates should be able to:**				
5.1	Definition of Pollution and Pollutants	5.1.1	define the terms pollution and pollutants;	*		
5.2	Types of Pollution	5.2.1	discuss the different varieties of pollution with a number of issues being raised; (a) air pollution (b) water pollution (c) land pollution (d) deforestation (rainforest)		*	
Air Pollution						
5.3	Sources of Air Pollution	5.3.1 5.3.2 5.3.3	identify major pollutants and their sources in the environment; identify the sources of indoor air pollution; describe how fossil fuel combustion, transport and industries cause air pollution;	* *	 *	
5.4	Impact on Human Health, Animals, Plants and Environment	5.4.1 5.4.2 5.4.3 5.4.4	describe how air pollution is affecting human health. animals and plants; describe adverse effects of smoking not only on smokers but also on passive smokers; describe weather conditions that may aggravate the air pollution problem; identify three areas of your locality / city/ country where air pollution has adverse effects such as on humans e.g. asthma, skin allergies, viral or bacterial diseases etc;	 *	* * * 	

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				K	U	A
5.5	Control Measures	5.5.1 5.5.2 5.5.3	suggest ways to reduce indoor air pollution; discuss different measures or strategies to control the dangers of air pollution; suggest how can one contribute in maintaining or improving air quality on personal and community level;		* *	* *
Water Pollution						
5.6	Sources	5.6.1 5.6.2 5.6.3	discuss the sewage industrial effluents and agriculture runoff as the major causes of water pollution; describe the prevailing methods of disposing off wastes; discuss the types of pollution caused by the fertilizer /cement / paper/ factories and tanneries in their locality;		* * *	
5.7	Impact on Human Health, Aquatic Life And Soil	5.7.1 5.7.2	describe the impacts of polluted water on human health, agriculture and aquatic life; list various water-borne diseases;	 *	*	
5.8	Reducing Water Pollution and Waste Water Treatment	5.8.1 5.8.2 5.8.3 5.8.4 5.8.5	suggest ways and measures to reduce water pollution; compare the effluents released by the factories in their locality; suggest proper measures to reduce pollution; discuss the waste treatment methods being used in various factories; identify the problems and effects of water logging and salinity;	 *	 * * 	* *

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				K	U	A
Land Pollution						
5.9.	Sources	5.9.1	describe the municipal, industrial, agrochemicals and hospital wastes as the major factors contributing towards land pollution;		*	
		5.9.2	differentiate between biodegradable and non-degradable materials;		*	
5.10	Impact on Human Health and Aquatic Life	5.10.1	describe the effects of municipal, industrial and hospital wastes on human health;		*	
		5.10.2	list effects of dumping wastes in rivers and seas;	*		
5.11	Impact on Soil and Environment	5.11.1	describe importance of soil and its various degradation issues such as water logging, salinity and soil erosion;		*	
		5.11.2	describe the problems stemming from land filling of refuse disposal;		*	
		5.11.3	discuss environmental implications of natural disasters e.g., earthquakes, landslides flood, storms, etc;		*	
5.12	Solid Waste Management	5.12.1	list the most appropriate methods for solid waste disposal;	*		
		5.12.2	suggest alternatives to land filling;			*
		5.12.3	suggest remedies to prevent erosion;			*
		5.12.4	describe refuse disposal through recycling and composting;		*	
		5.12.5	describe how refuse may be converted to energy and also give the pros and cons of doing this.		*	

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			K	U	A
6. Noise and Radiation Pollution	**Candidates should be able to:**				
Noise Pollution					
6.1. Definition of Noise	6.1.1	define noise;	*		
	6.1.2	differentiate between noise and musical sound;		*	
	6.1.3	differentiate between acceptable and non acceptable level of noise;		*	
6.2. Sources	6.2.1	list the sources of noise pollution and the techniques used to measure noise pollution;	*		
6.3. Impact on Human Health	6.3.1	describe effects of noise pollution on human health;		*	
6.4. Control Measures	6.4.1	suggest various ways to reduce noise pollution;			*
Radiation Pollution					
6.5. Sources	6.5.1	describe the natural and human caused sources of radiations;		*	
6.6. Impact on Human Health	6.6.1	describe the effects of various radiations on human health;		*	
	6.6.2	prepare a small report on various radiation sources and their effects on our surroundings;			*
	6.6.3	describe radioactive waste disposal problem;		*	
	6.6.4	list somatic and genetic effects of radiation;	*		
6.7. Control Measures	6.7.1	explain different precautionary measures to avoid radiation exposure to excessive use of cell phones, X-rays, colour T.V./monitor , radon gas, etc;		*	
	6.7.2	propose suggestions for safer disposal of radioactive waste;			*

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SSC Part II (Class X)

Topics		Specific Learning Outcomes		Cognitive Level		
				K	U	A
7. Biodiversity		**Candidates should be able to:**				
7.1.	Definition of Biodiversity	7.1.1	define the term biodiversity;	*		
		7.1.2	relate it with life conditions of an environment;		*	
7.2.	Importance of Biodiversity	7.2.1	explain the role of biodiversity in terms of the benefits human beings are getting from different species;		*	
7.3.	Endangered, Threatened and Extinct Species with Reference to Pakistan	7.3.1	describe the recommended criteria to declare particular species as endangered, threatened or extinct;		*	
		7.3.2	list the animal and plant species referred to as endangered, threatened and extinct in Pakistan;	*		
		7.3.3	investigate the threats to biodiversity in Pakistan;			*
		7.3.4	identify the protected areas of Pakistan on the map;	*		
7.4	Causes of the Loss of Biodiversity	7.4.1	explain the causes (habitat destruction, pollution, hunting and poaching, and introduction of Alien species) and factors that contribute to the loss of biodiversity globally as well as in Pakistan;		*	
7.5	Conservation of Biodiversity	7.5.1	define conservation and explain the need for conservation of bio-diversity;		*	
		7.5.2	describe some methods of conservation of bio-diversity;		*	
		7.5.3	explore factors affecting the vulnerability of a species to extinction;			*
		7.5.4	suggest the ways that people in a community should exercise to reduce threats to biodiversity;			*

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			K	U	A
	7.5.5 7.5.6	list the measures taken for conservation of endangered species of Pakistan; describe the measures taken by WWF, Government departments, and CSOs for the conservation of biodiversity.	*	 *	
8. Social Change In Behaviour Patterns In Relation To Environment	**Candidates should be able to:**				
8.1. Social Behaviour and Social Change	8.1.1 8.1.2	define social behaviour and social change; suggest the ways to bring about a change in behaviour patterns in relation to environment;	*		 *
8.2. Change in Consumption Patterns from Simple Living to Comforts / Luxuries	8.2.1 8.2.2 8.2.3	describe the changes in consumption patterns from simple living to luxury food habits, housing, transportation, automation, energy consumption, etc; determine the effects of changes in life styles on natural resource; prepare a newsletter based on research on local environmental issues, collecting information from a variety of sources, including printed and electronic media, and community surveys;		* * 	 *
8.3. Change in Production Patterns from Simple to Complex (Automation and Use of Machines)	8.3.1 8.3.2 8.3.3	explain changes in patterns of production affecting environment; state the importance of Islamic teachings regarding healthy and clean environment; give an account of waste reduction plan to keep a record of how much refuse they generate in a week and separate their trash into paper, glass, plastic, and metals.	 * 	* *	

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			K	U	A
9. Resources Utilization and its Impact on Environment	**Candidates should be able to:**				
9.1. National Resources and their Importance	9.1.1	define a natural resource;	*		
	9.1.2	identify and make a list of the natural resources of Pakistan;	*		
	9.1.3	describe renewable and non-renewable resources and make a list of each;		*	
9.2. Utilization of Energy Resources and their Impacts	9.2.1	compare the impacts of different energy resources on the environment (fossil fuels, hydroelectric, wind, solar and nuclear energy);		*	
	9.2.2	describe the patterns of production consumption;		*	
	9.2.3	discuss in groups the utilization of energy resources, their types and impacts;		*	
9.3. Safer Sources of Energy- Hydroelectric, Wind, Solar	9.3.1	describe the economic and social aspects of the development and use of hydroelectric, wind and solar energy;		*	
	9.3.2	estimate the consumption of energy, water and paper in school and at home;			*
9.4. Mineral Resources- Impact on Environment during Exploration, Treatment and Use	9.4.1	discuss in groups the mineral resources availability, their utilization and limitations;		*	
	9.4.2	discuss the existing mining practices and their impact on environment;		*	
9.5. Resources Management Practices (Electricity, Oil, Gas and Coal)	9.5.1	explain the wise use of resources in the prosperity and growth of a country;		*	
	9.5.2	describe how the modern mineral processing technologies promote more efficient and sustainable use of natural resources;		*	
	9.5.3	explain some resource management functions to conserve resources at individual level (electricity, oil, gas and coal);		*	

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			K	U	A
	9.5.4 9.5.5	discuss and list ways through which the community conserves and wastes resources; explain the daily (peak hour) and seasonal variations in the demand for electrical power.		* *	
10. Environment and Quality of Life	**Candidates should be able to:**				
10.1. Indicators of Quality of Life in Relation to Environment-Food, Water, Health, Education, Housing, Energy	10.1.1	explain the following indicators of quality of life in relation to environment -food, drinking water, health, education, housing, sanitation, energy and transport;		*	
10.2. Socio-Economic Impacts with Reference to Human Intervention: Decline In Productivity, Loss Of Employment in Deforested, Water Logged And Saline Areas	10.2.1 10.2.2 10.2.3	explain the socio-economic impacts of human intervention on productivity and loss of employment in deforested water logged and saline areas; describe the change in socio-cultural values in promoting the awareness for healthy environment ; suggest the ways to create awareness for various environmental issues ;		* *	 *
10.3. Gender Equity and Environment	10.3.1 10.3.2	discuss the preferences given to females or young girl on males or young boys regarding indicators of quality of life in relation to environment; identify the role of females in promoting healthy environment at home;	 *	*	

NOTES

			K	U	A
10.4. Literacy and Environment	10.4.1	describe the role of literate persons in promoting healthy environment ;		*	
	10.4.2	narrate how the common illiterate people may be given orientation about healthy environment through various mean of mass media;		*	
	10.4.3	construct techniques to enhance awareness of need for healthy environment among illiterate people.			*
11. Global and Regional Environmental Issues	**Candidates should be able to:**				
Deforestation					
11.1. Definition	11.1.1	define deforestation;	*		
11.2. Causes	11.2.1	list causes of deforestation;	*		
	11.2.2	discuss the problem of deforestation in Pakistan with reference to their locality;		*	
11.3. Consequences	11.3.1	explain consequences of deforestation;		*	
	11.3.2	discuss how our mangrove and pine forests are threatened;		*	
11.4. Reforestation – Method for Replenishing Forest	11.4.1	differentiate between reforestation and afforestation;		*	
	11.4.2	discuss reforestation and afforestation as methods of replenishing forests;		*	
	11.4.3	suggest the measures for the protection of juniper forests in Baluchistan as a national heritage;			*
	11.4.4	identify the important features of Changa Manga and Galiyat forests;	*		

NOTES

			K	U	A
Desertification					
11.5. Definition	11.5.1	define desertification;	*		
11.6. Causes	11.6.1	describe the sources which directly or indirectly become the cause of desertification;		*	
11.7. Consequences	11.7.1	explain the short term effects and long-term impacts of desertification at local as well as regional / international level;		*	
	11.7.2	identify the areas in Pakistan where desertification is expanding;	*		
11.8. Control Measure	11.8.1	suggest the ways to cope with the threat of desertification;			*
Urbanization					
11.9. Definition	11.9.1	define urbanization;	*		
11.10. Causes	11.10.1	describe the consequences of faster urbanization with respect to environmental degradation;		*	
	11.10.2	describe trends and causes leading to urbanization at national and global levels;		*	
11.11. Consequences	11.11.1	describe the risks for social cohesion from human rights due to urbanization;		*	
	11.11.2	explain socio-economic and socio-cultural health problems associated with increasing urban population;		*	

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			K	U	A
Greenhouse Effect and Global Warming					
11.12. Definition	11.12.1	define greenhouse effect;	*		
	11.12.2	describe greenhouse effect and global warming;		*	
11.13. Interrelation between Human Activities and Green House Effect	11.13.1	draw a concept map that demonstrates the interrelation between energy use, human activities and greenhouse gases;		*	
11.14. Causes	11.14.1	describe the factors responsible for heat-trapping effect of carbon dioxide in atmosphere;		*	
11.15. Consequences	11.15.1	enlist the probable impacts of global warming on environment, atmosphere, oceans and biota;	*		
11.16. Control Measure	11.16.1	enlist measures that have been taken to reduce green house gases;	*		
	11.16.2	suggest ways to mitigate the effect of global warming and greenhouse effect;			*
	11.16.3	discuss the effectiveness of various options for reducing greenhouse effect; such as Kyoto protocol, increasing energy efficiencies, large scale vegetation, etc;		*	
Acid Rain					
11.17. Definition	11.17.1	define acid rain;	*		
11.18. Causes	11.18.1	name the two major acids involved in acid rain and describe how they are formed;	*		
	11.18.2	describe the factors responsible for acid rain;		*	

NOTES

			K	U	A
11.19. Consequences	11.19.1 11.19.2	describe how acid rain affects aquatic ecosystems and terrestrial ecosystems; describe how statues and monuments are being affected by acid rain;		* *	
11.20. Control Measure	11.20.1 11.20.2	suggest methods to reduce acid-forming emission; explain the importance of protection of our marine life;		 *	*
Wetlands and Oceans					
11.21. Definition	11.21.1 11.21.2	define wetlands; explain how wetlands are important for biodiversity;	*	 *	
11.22. Causes	11.22.1	describe the factors responsible for wetlands and oceans;		*	
11.23. Consequences	11.23.1	explain the importance of protection of our marine life;		*	
11.24. Control Measure	11.24.1	describe the major initiatives taken by international community to protect the wetlands;		*	
Ozone Layer Depletion					
11.25. Definition	11.25.1	describe the nature and importance of the ozone layer and state its formation and breakdown;		*	
11.26. Causes	11.26.1 11.26.2	list the sources of chlorine entering the stratosphere; identify the effects of ozone layer depletion;	* *		
11.27. Consequences	11.27.1	describe the efforts to cope with depletion of the ozone layer shield;		*	
11.28. Control Measure	11.28.1	describe the major initiatives taken by international community to protect the ozone.		*	

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			K	U	A
12. Environmental Management	**Candidates should be able to:**				
12.1. Sustainability of the Environment	12.1.1	describe the relationship of environmental management to sustainable development (wise use of resources, efficient resource utilization, reuse and recycling);		*	
	12.1.2	state the role of modern technologies in environmental protection;	*		
	12.1.3	discuss the five "r" for better environmental management i.e. refuse, reduce, recycled, reuse and rethink;		*	
	12.1.4	discuss environmental management measures in locality about reducing use of polythene bags, food adulteration, use of dust bins, use of bicycle as an alternate to auto-transport, solid waste management (collection and disposal, etc);		*	
12.2. Environmental Ethics	12.2.1	define environmental ethics;	*		
	12.2.2	discuss Islamic teachings about our moral obligations to leave the environment in good conditions for our next generation;		*	
	12.2.3	describe that why we have a moral obligation to allow the environmental aspects to exist and to allow them to continue;		*	
	12.2.4	discuss the solutions of environmental problems in the context of value judgment in groups keeping in view examples from daily life;		*	
	12.2.5	explain the need for placing a value on some aspects including living things of our environment;		*	
	12.2.6	describe the aesthetic arguments which relates to our appreciation of the beauty of nature in the context of environmental ethics;		*	
	12.2.7	describe why some aspects of environmental are valuable for provision of benefits to individuals;		*	
	12.2.8	discuss wise-use, reuse, substitution and recycling conservation strategies;		*	

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			K	U	A
12.3. Introduction to Environmental Impact Assessment (EIA)	12.3.1	define environmental impact assessment (EIA), risk analysis and environmental impact statement;	*		
	12.3.2	discuss scoping, impact prediction, impact evaluation, mitigation and monitoring as steps of EIA;		*	
	12.3.3	discuss how the personal biases may be minimized and objectively maximizes in Environmental Impact Assessment;		*	
	12.3.4	compare the energy efficiency of major appliances;		*	
12.4. Policies, Legislation, and Regulatory Mechanisms	12.4.1	describe the history of development of policies with reference to environment at international and national level;		*	
	12.4.2	identify the responsibilities of government agencies, community/CSOs for monitory and protecting the environment at local, state and national levels;	*		
	12.4.3	describe various policies which can be more effective for promoting healthy environment at local level;		*	
	12.4.4	describe that to what extent participation of individuals can be effective in policy making for solving environmental problems at local level;		*	
	12.4.5	name important laws enacted by Pakistan's government for protecting the environment;	*		
	12.4.6	list salient features of environmental protection law of 1997 in Pakistan;	*		
	12.4.7	name significant international conventions, protocols and treaties in relation to environment to which Pakistan is a signatory;	*		
	12.4.8	identify the role of policies of government and other regulatory bodies in protecting the environment;	*		
	12.4.9	explain various traditional practices related to protection of environment;		*	

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				K	U	A
12.5.	Civic Responsibilities of Individuals, Communities, CSOs, and Government Organizations	12.5.1	identify that how they can contribute to environmental quality in their communication;	*		
		12.5.2	describe the role of education in environmental management;		*	
		12.5.3	describe the potential impact on citizen participation on issues related to the environment and their community;		*	
		12.5.4	discuss how to cultivate and nurture civic culture and values in maintaining healthy environment;		*	
		12.5.5	analyse the value of conservation in the home and create a personal conservation plan;			*
		12.5.6	recognise the rights and responsibilities as a citizen in maintaining a healthy environment.		*	

NOTES

4. Scheme of Assessment

Class IX

Table 1: Number of Student Learning Outcomes by Cognitive Level

Topic No.	Topics	No. of Sub-topics	SLOs			Total
			K	U	A	
1.	Nature of Environmental Studies	4	5	4	0	9
2.	Our Planet - Earth	6	5	13	0	18
3.	Ecosystem	10	6	13	2	21
4.	Population Growth, Development and Environment	5	7	17	3	27
5.	Air, Water and Land Pollution	12	8	20	6	34
6.	Noise and Radiation Pollution	7	3	7	3	13
	Total	**44**	**34**	**74**	**14**	**122**
	Percentage		**28**	**61**	**11**	**100**

Table 2: Allocation of Marks for the Multiple Choice Questions (MCQs), Constructed Response Questions (CRQs) and Extended Response Questions (ERQs)

Topic No.	Topic	No. of Sub-Topics	Marks			
			Multiple Choice Questions	Constructed Response Questions	Extended Response Questions	Total
1.	Nature of Environmental Studies	4	7	7	5	19
2.	Our Planet - Earth	6				
3.	Ecosystem	10	7	8	5	20
4.	Population Growth, Development and Environment	5	6	8	0	14
5.	Air, Water and Land Pollution	12	10	7	5	22
6.	Noise and Radiation Pollution	7				
	Total	**44**	**30**	**30**	**15**	**75**

Table 3: Paper Specifications

Topic No.	Topics	Marks Distribution			Total Marks
1.	Nature of Environmental Studies	MCQs 7 @ 1 Mark CRQ 1 @ 7 Marks *ERQ 1 @ 5 Marks Choose any ONE from TWO			19
2.	Our Planet - Earth				
3.	Ecosystem	MCQs 7 @ 1 Mark CRQ 1 @ 8 Marks ERQ 1 @ 5 Marks Choose any ONE from TWO			20
4.	Population Growth, Development and Environment	MCQs 6 @ 1 Mark CRQ 1 @ 8 Marks			14
5.	Air, Water and Land Pollution	MCQs 10 @ 1 Mark CRQ 1 @ 7 Marks ERQ 1 @ 5 Marks Choose any ONE from TWO			22
6.	Noise and Radiation Pollution				
	Total Marks	**MCQs 30**	**CRQs 30**	**ERQs 15**	**75**

* Extended response questions (ERQs) will require answers in more descriptive form. The answers will be in a paragraph rather than a word or a single sentence.

Class X

Table 4: Number of Student Learning Outcomes by Cognitive Level

Topic No.	Topics	No. of Sub-topics	SLOs			Total
			K	U	A	
7.	Biodiversity	5	4	7	3	14
8.	Social Change In Behaviour Patterns In Relation To Environment	3	2	4	2	8
9.	Resources Utilization And Its Impact On Environment	5	2	12	1	15
10.	Environment And Quality Of Life	4	1	6	2	9
11.	Global And Regional Environmental Issues	28	14	26	4	44
12.	Environmental Management	5	9	21	1	31
	Total	**50**	**32**	**76**	**13**	**121**
	Percentage		**26**	**63**	**11**	**100**

Table 5: Allocation of Marks for the Multiple Choice Questions (MCQs), Constructed Response Questions (CRQs) and Extended Response Questions (ERQs)

Topic No.	Topic	No. of Sub-Topics	Marks			
			Multiple Choice Question	Constructed Response Questions	Extended Response Questions	Total
8.	Social Change In Behaviour Patterns In Relation To Environment	3	5	7	0	12
9.	Resources Utilization And Its Impact On Environment	5	8	8	5	21
10.	Environment And Quality Of Life	4				
11.	Global And Regional Environmental Issues	28	10	8	5	23
7.	Biodiversity	5	7	7	5	19
12.	Environmental Management	5				
	Total	**50**	**30**	**30**	**15**	**75**

Table 6: Paper Specifications

Topic No.	Topics	Marks Distribution			Total Marks
8.	Social Change In Behaviour Patterns In Relation To Environment	MCQs 5 @ 1 Mark CRQ 1 @ 7 Marks			12
9.	Resources Utilization And Its Impact On Environment	MCQs 8 @ 1 Mark CRQs 2 @ 4 Marks each *ERQ 1 @ 5 Marks Choose any ONE from TWO			21
10.	Environment And Quality Of Life				
11.	Global And Regional Environmental Issues	MCQs 10 @ 1 Mark CRQs 2 @ 4 Marks each ERQ 1 @ 5 Marks Choose any ONE from TWO			23
7.	Biodiversity	MCQs 7 @ 1 Mark CRQ 1 @ 7 Marks ERQ 1 @ 5 Marks Choose any ONE from TWO			19
12.	Environmental Management				
	Total	**MCQs 30**	**CRQs 30**	**ERQs 15**	**75**

* Extended response questions (ERQs) will require answers in more descriptive form. The answers will be in a paragraph rather than a word or a single sentence.

4.1 Tables 1 and 4 summarize the number and nature of SLOs in each topic in classes IX and X. This will serve as a guide in the construction of the examination paper. It also indicates that more emphasis has been given to Understanding (61% and 63%), Application and higher order skills (11%) to discourage rote memorization. Tables 1 and 4 however do not translate directly into marks.

4.2 There will be two examinations, one at the end of Class IX and one at the end of Class X.

4.3 In each class, the theory paper will be in two parts: paper I and paper II. Both papers will be of duration of 3 hours.

4.4 Paper I theory will consist of 30 compulsory, multiple choice items. These questions will involve four response options.

4.5 Paper II theory will carry 45 marks and consist of a number of compulsory, structured questions and a number of extended response questions. Each extended response question will be presented in an either/or form.

4.6 All constructed response questions will be in a booklet which will also serve as an answer script.

5. Teaching-Learning Approaches and Suggested Activities

1. Nature of Environmental Studies

- Make chronological chart showing main events in historical perspective of environmental studies

2. Our Planet – Earth

- Organize a tree plantation campaign in school and discuss how it affects on change in the environment

3. Ecosystem

- prepare a poster that reflects flow of energy in a forest ecosystem
- record observations from their immediate environment as to how environment has been affected by human actions
- prepare a report on a visit of a nearby zoo to observe the differences in the habitats of different animals

4. Air, Water and Land Pollution

- observe a busy road/bus-stand and discuss the consequences of poor transport practices on the environment

5. Noise and Radiation Pollution

- collect information from library/internet about the nuclear disasters in the world and their effects
- do a simple research in the city / area to identify the quite/calm and noisy areas

6. Social Change in Behaviour Patterns in Relation to Environment

- write a report based on observations of general behaviour of the people during a visit to the areas where automation of machines and use of chemical pesticides is polluting the environment;
- report about the activities of the local council regarding sanitation, solid waste and sewerage;

7. Resources Utilization and its Impact on Environment

- show an understanding that solar cells produce electrical energy whereas solar panels produce thermal energy;
- solve a problem related to the production and consumption data i.e. fluorescent vs. incandescent;

8. Environment and Quality of Life

- prepare reports after collecting data on survey questionnaire from their homes neighbours school and community about the indicators of quality of life e.g. food water, health, education, housing, sanitation, transport, energy etc;
- use documentary sources in schools to create awareness for various environmental issues among fellow beings;

9. Global and Regional Environmental Issues

Desertification

- collect data from various sources that depict the current situation of desertification in the world

Ozone Layer Depletion

- collect information through library research/ internet the steps taken to reduce emission of CFCs

10. Environmental Management

- identify and undertake activities that contribute positively to sustainability of the environment

6. Reference Material and Website

Reference Material

Joseph, Benny. (2006). *Environmental Studies*. Published by McGraw Hill Company Limited.

Websites

Part–I (Class IX)

Nature of Environmental Studies
www.ugc.ac.in/policy/env/Chapter1.pdf

Our Planet – Earth
http://www.cotf.edu/ete/ESS/ESSspheres.html
http://oceanexplorium.org/pages/Science-on-a-Sphere%C2%AE.html
http://www.classzone.com/books/earth_science/terc/content/investigations/es0103/es0103page03.cfm?chapter_no=investigation

Ecosystem
http://www.abheritage.ca/abnature/Ecosystems/intro.htm
www.fi.edu/tfi/units/life/habitat/habitat.html
http://www.bcb.uwc.ac.za/Sci_Ed/grade10/ecology/index.htm

Population Growth, Development and Environment
http://en.wikipedia.org/wiki/Sustainability
http://www.actionbioscience.org/environment/hinrichsen_robey.html
http://www.eldis.org/vfile/upload/1/document/0908/Horizon_Briefing_August2.pdf

Air, Water and Land Pollution
http://www.bcb.uwc.ac.za/Sci_Ed/grade10/ecology/index.htm
http://www.scribd.com/doc/31648203/Pollution-in-Pakistan
http://library.thinkquest.org/C001611/pollution.html

Noise and Radiation Pollution
http://www.reading.gov.uk/Documents/ourenvironment/stateoftheenvironment/Chap008_NoiseRadiation.pdf
http://www.tutorvista.com/topic/noise-and-radiation-pollution

Part–II (Class X)

Biodiversity
http://en.wikipedia.org/wiki/Biodiversity
http://www.globalissues.org/issue/169/biodiversity

Social Change In Behaviour Patterns In Relation To Environment
http://en.wikipedia.org/wiki/Social_change

Resources Utilization and Its Impact On Environment
http://www.cicwildlife.org/uploads/media/Nuding_Resource_utilization_and_the_common-goods_dilemma.pdf

Environment and Quality Of Life
http://en.wikipedia.org/wiki/Quality_of_life
http://www.heartsandminds.org/environment/steps2.htm

Global and Regional Environmental Issues
http://h20338.www2.hp.com/hpux11i/downloads/wlm.serviceguard.pdf
http://www.globalissues.org/issue/168/environmental-issues

Environmental Management
http://en.wikipedia.org/wiki/Environmental_management
http://www.environmentalmanagement.aau.dk/

7. Definition of Cognitive Levels and Command Words

7.1 Definition of Cognitive Levels

Knowledge:

This requires knowing and remembering facts and figures, vocabulary and contexts, and the ability to recall key ideas, concepts, trends, sequences, categories, etc. It can be taught and evaluated through questions based on: who, when, where, what, list, define, describe, identify, label, tabulate, quote, name, state, etc.

Understanding:

This requires understanding information, grasping meaning, interpreting facts, comparing, contrasting, grouping, inferring causes/reasons, seeing patterns, organizing parts, making links, summarizing, solving, identifying motives, finding evidence, etc. It can be taught and evaluated through questions based on: why, how, show, demonstrate, paraphrase, interpret, summarize, explain, prove, identify the main idea/theme, predict, compare, differentiate, discuss, chart the course/ direction, report, solve, etc.

Application:

This requires using information or concepts in new situations, solving problems, organizing information and ideas, using old ideas to create new ones, generalizing from given facts, analyzing relationships, relating knowledge from several areas, drawing conclusions, evaluating worth, etc. It can be taught and evaluated through questions based on: distinguish, analyse, show relationship, propose an alternative, prioritize, give reasons for, categorize, illustrate, corroborate, compare and contrast, create, design, formulate, integrate, rearrange, reconstruct/recreate, reorganize, predict consequences etc.

7.2 Definition of Command Words

Knowledge

Define:	Only a formal statement or equivalent paraphrase is required. No examples need to be given
Identify:	Describe with specific examples of how a given term or concept is applied in daily life.
List/Enlist:	Requires a number of points, generally each of one word, with no elaboration. Where a given number of points are specified, this should not be exceeded.
Locate:	Determine the precise position or situation of an entity in a given context.
Name:	Mention the commonly used word for an object.

State:	Implies concise answer with little or no supporting argument, for example a numerical answer that can be obtained by inspection.

Understanding

Classify:	State the basis for categorization of a set of related entities and assign example to categories.
Compare:	List the main characteristics of two entities clearly identifying similarities (and differences)
Differentiate:	To identify those characteristics which are always or sometimes distinguish between two categories.
Describe:	To state in words (Using diagrams where appropriate) the main points of the topic. It is often used with reference wither to particular phenomena or to particular experiments. In the former instance, the term usually implies that the answer should include reference to (visual) observations associated with the phenomena.
Determine:	Often implies that the quantity concerned cannot be measured directly but is obtained by calculation, substituting measured or known values of other quantities into standard formula, for e.g. relative molecular mass.
Discuss:	To give a critical account of the point involved in the topic.
Draw:	Implies a simple freehand sketch or diagram. Care should be taken with proportions and the clear labelling of parts.
Explain	Make an idea, situation or problem clear by describing it in detail revealing relevant data or facts.
Give an account for	To narrate a series of events or transactions
Narrate	To write down the facts and explanation as given or provided in the text.
Recognise	Involves looking at a given example and stating what it most probably is.
Relate	Describe how things depend upon, follow from or are part of another.

Application

Analyse:	To judge the objects or events from the knowledge acquired previously.
Construct:	To set in order or something formulated or built systematically or frame a concept, model, or schematic idea.
Deduce	By recall but by making a logical connection between other pieces of information. Such information may be wholly given in the question or may depend on answer extracted in an early part of the question.
Estimate	To make an approximate quantitative judgement.
Examine	Inspect (something) in detail to determine the nature or condition.
Explore	To examine thoroughly and systematically to be able to make a statement about a phenomenon or concept.
Investigate	To examine systematically a situation or problem in order to a rational conclusion.
Interpret	To present or conceptualize the meaning of by means of graphical representation or explanation with different point of views.
Predict	Implies that the candidates is not expected to produce the required answer
Prepare	A practical activity in which choice of equipment, order of procedure and accuracy of measurement will all play a part.
Suggest/Propose	Make a judgement and give some support or reason for your suggestion.

Annex

SSC Scheme of Studies[3]

AKU-EB as a national board offers SSC and HSSC qualifications for both English and Urdu medium schools. The revised SSC Scheme of Studies issued by the Curriculum Wing was implemented from September 2007. Accordingly, each SSC subject will be taught across both the classes IX and X. The Science and Humanities group subjects are offered at SSC level. The marks allocated to subjects in the revised National Scheme of Studies of September 2007 have been followed.

SSC I and II (Class IX and X) subjects on offer for examination

SSC Part-I (Class IX) Science Group

Subjects	Marks			Medium
	Theory	Practical	Total	
English Compulsory-I	75	-	75	English
Urdu Compulsory-I **OR** Urdu Aasan [a] **OR** History and Geography of Pakistan-I [b]	75	-	75	Urdu Urdu English
Islamiyat-I **OR** Ethics-I [c]	*30	-	*30	English / Urdu
Pakistan Studies-I	*45	-	*45	English / Urdu
Mathematics-I	75	-	75	English / Urdu
Physics-I	65	10	75	English / Urdu
Chemistry-I	65	10	75	English / Urdu
Biology-I **OR** Computer Science-I	65	10	75	English / Urdu English
Total:	***495**	**30**	***525**	

SSC Part-II (Class X) Science Group

Subjects	Marks			Medium
	Theory	Practical	Total	
English Compulsory-II	75	-	75	English
Urdu Compulsory-II **OR** Sindhi [a] **OR** History and Geography of Pakistan-II[b]	75	-	75	Urdu Sindhi English
Islamiyat-II **OR** Ethics-II [c]	*45	-	*45	English / Urdu
Pakistan Studies-II	*30	-	*30	English / Urdu
Mathematics-II	75	-	75	English / Urdu
Physics-II	65	10	75	English / Urdu
Chemistry-II	65	10	75	English / Urdu
Biology-II **OR** Computer Science-II	65	10	75	English / Urdu English
Total:	***495**	**30**	***525**	

a. Candidates from the province of Sindh may appear in "Urdu Aasan" in SSC Part I and in "Sindhi" in Part II examination.

b. Foreign students may opt HISTORY and GEOGRAPHY OF PAKISTAN in lieu of Urdu Compulsory, subject to the Board's approval.

c. For non-Muslim candidates only.

* The above will be implemented in
SSC Part I 2013 Examinations and onwards
SSC Part II 2014 Examinations and onwards

[3] Government of Pakistan September 2007. *Scheme of Studies for SSC and HSSC (Classes IX-XII).* Islamabad: Ministry of Education, Curriculum Wing.

SSC Part-I (Class IX) Humanities Group

Subjects	Marks	Medium
English Compulsory-I	75	English
Urdu Compulsory-I **OR** Urdu Aasan [a] **OR** History and Geography of Pakistan-I [b]	75	Urdu Urdu English
Islamiyat-I **OR** Ethics-I [c]	*30	English / Urdu
Pakistan Studies-I	*45	English / Urdu
General Mathematics-I	75	English / Urdu
Any three of the following Elective Subjects	225 (75 each)	
1. **Geography-I		English / Urdu
2. General Science-I		English / Urdu
3. Computer Science-I (65+10 practical)		English
4. Economics-I		English / Urdu
5. Civics-I		English / Urdu
6. **History of Pakistan-I		English / Urdu
7. **Elements of Home Economics-I		English / Urdu
8. **Food and Nutrition-I (65+10 practical)		English / Urdu
9. **Art & Model Drawing-I		English
10. **Business Studies-I		English
11. **Environmental Studies-I		English
Total:	***525**	

SSC Part-II (Class X) Humanities Group

Subjects	Marks	Medium
English Compulsory-II	75	English
Urdu Compulsory-II **OR** Sindhi [a] History and Geography of Pakistan-II [b] **OR**	75	Urdu Sindhi English
Islamiyat-II **OR** Ethics-II [c]	*45	English / Urdu
Pakistan Studies-II	*30	English / Urdu
General Mathematics-II	75	English / Urdu
Any three of the following Elective Subjects	225 (75 each)	
1. **Geography-II		English / Urdu
2. General Science-II		English / Urdu
3. Computer Science-II (65+10 practical)		English
4. Economics-II		English / Urdu
5. Civics-II		English / Urdu
6. **History of Pakistan-II		English / Urdu
7. **Elements of Home Economics-II		English / Urdu
8. **Food and Nutrition-II (65+10 practical)		English / Urdu
9. **Art & Model Drawing-II		English
10. **Business Studies-II		English
11. **Environmental Studies-II		English
Total:	***525**	

SSC Part-I and Part-II (Class IX-X) (Additional Subjects)

SSC Part I	SSC Part II	Marks	Medium
1. **Literature in English-I [d]	1. **Literature in English-II [d]	75 each	English
2. **Commercial Geography-I [d]	2. **Commercial Geography-II [d]		English
3. **Additional Mathematics-I [d]	3. **Additional Mathematics-II [d]		English

a. Candidates from the province of Sindh may appear in "Urdu Aasan" in SSC Part I and in "Sindhi" in Part II examination.

b. Foreign students may opt HISTORY and GEOGRAPHY OF PAKISTAN in lieu of Urdu Compulsory, subject to the Board's approval.

c. For non-Muslim candidates only.

d. Subject will be offered as Additional Subject.

* The above will be implemented in

SSC Part I 2013 Examinations and onwards SSC Part II 2014 Examinations and onwards

****These subjects are offered <u>ONLY</u> in the May examination.**