



آغا خان یونیورسٹی ایگزامینیشن بورڈ
AGA KHAN UNIVERSITY EXAMINATION BOARD

**Higher Secondary School Certificate
Examination Syllabus**

**BUSINESS MATHEMATICS
CLASS XI**

(based on National Curriculum 2000)

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CLASS XI**

Sr. No.	Table of Contents	Page No.
	Preface	5
1	Aims/Objectives of the National Curriculum (2002)	7
2	Topics and Student Learning Outcomes of the Examination Syllabus	9
3	Scheme of Assessment	21
4	Teaching-Learning Approaches and Classroom Activities	23
5	Recommended Texts and Reference Materials	23
6	Definition of Cognitive Levels and Command Words in the Student Learning Outcomes in Examination Papers	24
	Annex : HSSC Scheme of Studies	28

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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 XI and XII 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 higher 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 academicians, 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 textbook 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 to take effect in September, 2008. These documents are a major step forward towards a standards-related curriculum and have been welcomed by AKU-EB. Our current HSSC syllabuses have been revised to ensure conformity with the new National Curriculum 2006.

We stand committed to all students who have embarked upon the HSSC courses in facilitating their learning outcomes. Our examination syllabus document ensures all possible support.



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

1. Rationale of the AKU-EB Examination Syllabus

1.1 General Rationale

1.1.1 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 HSSC examination are 1100 from the year 2008 and onwards. All subjects are to be taught and examined in both classes XI and XII. It is therefore important for teachers, students, parents and other stakeholders to know:

- (a) that the AKU-EB Scheme of Studies for its HSSC examination (Annex A) derives directly from the 2007 Ministry of Education Scheme of Studies;
- (b) which topics will be examined in Class XII;
- (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;

1.1.2 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.

1.1.3 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.

1.1.4 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, but not necessarily the same content, to elicit evidence of these competencies in candidates’ responses. The definitions of command words used in this syllabus are given in Section 8. It is hoped that teachers will find these definitions useful in planning their lessons and classroom assessments.

- 1.1.5 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 and 5.
- 1.1.6 Some topics from the National Curriculum have been elaborated and enriched for better understanding of the subject and/or to better meet the needs of students in the twenty-first century. These additional topics have been italicized in Section 3 of this syllabus.

2. Topics and Student Learning Outcomes of the Examination Syllabus

Part I (Class XI)

Topics	Student Learning Outcomes	Cognitive Level ¹		
		K	U	A
1. Business Arithmetic	Candidates should be able to:			
1.1 Ratio and Proportion	1.1.1 describe ratio and the importance of the order in which the ratio is expressed;		*	
	1.1.2 identify equivalent ratios and convert a ratio in its simplest form or lowest term;		*	
	1.1.3 describe and calculate continued ratio of more than two quantities(up to four quantities);		*	*
	1.1.4 divide a quantity in a given ratio;			*
	1.1.5 solve related problems;			*
1.2 Proportion and its Types	1.2.1 define and illustrate proportion;	*	*	
	1.2.2 describe direct, inverse and compound proportion;		*	
	1.2.3 solve problems involving direct, inverse and compound proportion;			*

¹ K = Knowledge, U = Understanding, A= Application (for explanation see section 6: Definition of command words used in Specific Learning Objectives and in Examination Questions).

NOTES

		K	U	A
1.3 Percentage	1.3.1 define percentage; 1.3.2 convert percentage to fractions, percentage to decimal and vice versa; 1.3.3 solve simple problems involving percentages(e.g. percentage of marks obtained, percentage of certain element in a chemical compound, increase/decrease in percentage and to calculate quantities when percentage is given);	*	*	*
1.4 Profit and Loss	1.4.1 define marked price or tag price, selling price, cost price, profit, loss, discount, profit percentage and loss percentage; 1.4.2 solve related problems of: <ul style="list-style-type: none"> • selling price, cost price; • profit, loss and discount; • profit and loss percentage; 	*		*
1.5 Simple Interest	1.5.1 define interest, interest rate, period(monthly, bimonthly, quarterly, half yearly, yearly or per annum), principal, accumulated amount, simple interest; 1.5.2 solve problems related to simple interest;		*	*
1.6 Compound Interest	1.6.1 define compound interest; 1.6.2 differentiate between simple and compound interest; 1.6.3 solve problems related to compound interest;	*	*	*
1.7 Annuities	1.7.1 explain annuities and its accumulation factor; 1.7.2 explain the difference between interest and annuities; 1.7.3 calculate problems related to simple/ordinary annuity.		*	*

NOTES

		K	U	A
2. Functions and their Graphs	Candidates should be able to:			
2.1 Rectangular Coordinate System and Function	2.1.1 illustrate Cartesian plane(horizontal axis, vertical axis, origin and quadrants, abscissa, ordinate and ordered pair;	*	*	
	2.1.2 describe and differentiate between independent and dependent variable, domain and range;		*	
	2.1.3 define relation and function and differentiate between relation and function;		*	
2.2 Linear and Quadric Functions	2.2.1 define and differentiate between linear and quadratic functions and write examples of these functions;	*	*	*
	2.2.2 draw and interpret graphs of linear and quadratic functions;		*	*
	2.2.3 locate and interpret x and y intercepts of linear and quadratic functions graphically;		*	*
	2.2.4 calculate vertex and identify direction (concavity)of parabola(quadratic function);		*	*
2.3 Distance between Two Points	2.3.1 write and apply distance formula between two points on Cartesian plane to solve related problems;	*		*
	2.3.2 write and apply mid point formula;			*
2.4 Equation of Straight Line	2.4.1 write following form of straight line <ul style="list-style-type: none"> • slope-intercept form • point-slope form • two-point form • intercepts form • normal form; 	*		
	2.4.2 find equation of straight line by using given conditions as discussed above.			*

NOTES

		K	U	A
3. Linear, Quadratic and Simultaneous Equations	Candidates should be able to:			
3.1 Linear Equation in Single Variable	3.1.1 define and describe linear equation in one variable; 3.1.2 solve linear equation in one variable; 3.1.3 solve problems related to linear equations;	*	*	* *
3.2 Quadratic Equation in Single Variable	3.2.1 define quadratic equation in one variable; 3.2.2 solve quadratic equation in one variable by using <ul style="list-style-type: none"> • factorization; • method of completing square; • quadratic formula; 3.2.3 solve problems related to quadratic equations;	*		* *
3.3 Simultaneous Linear Equations	3.3.1 solve simultaneous linear equations by using the method of elimination and substitution; 3.3.2 solve problems related to simultaneous linear equations.			* *

NOTES

		K	U	A
4. Binary Number System	Candidates should be able to:			
4.1 Differentiating between Binary and Decimal Numbers	4.1.1 define and differentiate between binary numbers and decimal numbers;	*	*	
4.2 Inter conversion of Decimal Numbers and Binary Numbers	4.2.1 convert decimal numbers(whole and fraction) into binary numbers; 4.2.2 convert binary numbers(whole and fraction) into decimal numbers;		* *	
4.3 Application of Mathematical Operation	4.3.1 apply arithmetic operations (+, -, ×, ÷) in binary number system.			*
5. Matrices and Determinants	Candidates should be able to:			
5.1 Matrices (up to order 3×3)	5.1.1 define order of matrix; 5.1.2 define and identify types of matrices(row, column, square, diagonal, rectangular, scalar, null and transpose of matrices); 5.1.3 perform addition, subtraction and multiplication of matrices; 5.1.4 perform multiplication of matrix by any scalar (real number);	* *	* * *	
5.2 Determinants	5.2.1 calculate determinant up to order 3 by 3; 5.2.2 define singular and non-singular matrices; 5.2.3 solve problems related to singular and non-singular matrices;	*		* *

NOTES

		K	U	A
5.3 Inverse of a Matrices	5.3.1 calculate minor and co-factor of elements of a matrix;			*
	5.3.2 find adjoint of a matrices up to 3 by 3;			*
	5.3.3 calculate inverse of matrices up to order 3 by 3 (adjoint method);			*
5.4 System of Linear Equations	5.4.1 solve system of linear equations by matrix method;			*
	5.4.2 solve system of linear equations by Cramer's rule.			*

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3. Scheme of Assessment

Class XI

Table 1: Number of Specific Learning Objectives by Cognitive level

Topic No	Topic	No. of Sub Topic	SLOs			Total
			K	U	A	
1	Business Arithmetic	7	4	10	9	23
2	Functions and their graphs	4	4	7	7	18
3	Linear, Quadratic and Simultaneous equations	3	2	1	6	9
4	Binary Number System	3	1	3	1	5
5	Matrices and determinants	4	3	3	7	13
	Total	21	14	24	30	68
	Percentage		21	35	44	100

Table 2: Allocation of Marks for the Objective Test, and Constructed Response Paper

Topic No	Topic	No. of Sub-Topic	Marks		
			Objective test	Constructed Response Paper	Total
1	Business Arithmetic	9	6	8	14
2	Functions and their graphs	4	3	6	9
3	Linear, Quadratic and Simultaneous equations	3	4	6	10
4	Binary Number System	3	4	4	8
5	Matrices and determinants	4	3	6	9
	Total	23	20	30	50

Table 3: Paper Specifications

Topic No.	Topics	Marks Distributions		Total Marks
1	Business Arithmetic (Ratio, Proportion and Percentage)	MCQs 6 @ 1 Mark **CRQs 2 @ 4 Marks Each Choose any TWO from THREE		14
2	Function and their graph	MCQs 3 @ 1 Mark **CRQs 2 @ 3 Marks Each Choose any TWO from THREE		9
3	Linear and quadric equation, Simultaneous equation	MCQs 4 @ 1 Mark **CRQs 2 @ 3 Marks Each Choose any TWO from THREE		10
4	Binary number and its operation	MCQs 4 @ 1 Mark CRQ 1 @ 4 Marks		8
5	Matrices, Solution of simultaneous equation through the matrices	MCQs 3 @ 1 Mark *CRQ 1 @ 6 Marks Choose any ONE from TWO		9
	Total	MCQs 20	CRQs 30	50

* There will be TWO questions and the candidates will be required to attempt any ONE by making a choice out of the TWO.

* There will be THREE questions and the candidates will be required to attempt any TWO by making a choice out of the THREE.

- 3.1 Table 1 indicate the number and nature of SLOs in each topic in class XI. This will server as a guide in the construction of the examination paper. It also indicates that more emphasis has been given to the understanding (35%), Application and higher order skills (44%) in class XI to discourage rote memorization. Table 1, however, does not translate directly into marks.
- 3.2 Table 2 shows the distribution of marks. There will be 40% objective test items each carrying one mark. The constructed response paper will carry 30 marks. It is AKU-EB policy that every topic should be examined.
- 3.3 The question paper will be in two parts: paper I and paper II. Both papers will be administered within 2 hours.
- 3.4 Paper I will be a separately timed objective test of 30 minutes, administered before the constructed response paper (paper II). There will be no choice in the objective test.
- 3.5 Paper II will carry 30 marks and consist of a number of compulsory, constructed response questions. There will be no choice among the topics in constructed response questions but it may be within the topic.
- 3.6 All constructed response questions will be in a booklet which will also serve as an answer script.

4. Teaching –Learning Approaches and Classroom Activities

- 4.1 As the AKU-EB syllabus focuses on understanding and higher order thinking skills. Teachers need to encourage activity and problem-based classroom practices.
- 4.2 The following strategies are recommended:
- 4.2.1 Before starting any topic, teachers should give the relevant information from that topic to build up and recall their previous knowledge if any.
 - 4.2.2 Lecture should be well organised and completed within limited time period with current and practical examples.
 - 4.2.3 To understand the cognitive level of ongoing topics, teacher should provide hard copies of syllabus to the students.
 - 4.2.4 During lecture, teacher should ask questions randomly from the students to assess whether they are understanding or not.
 - 4.2.5 If a teacher feels that a student does not understand, the student should be called to the board to clarify the concept. This will facilitate the student to comprehend more accurately
 - 4.2.6 Encourage students to present selected and applied topics of the syllabus.
 - 4.2.7 Arrange educational trips of different organisations and institutes, i.e. banks and other sort of financial institutions.
 - 4.2.8 Assign tasks to the students to search relevant material from other sources, i.e. library, internet and news papers etc.
 - 4.2.9 Organise group discussions among students to share their views about current topics.
 - 4.2.10 Whenever possible organise meeting of students with different professionals and intellectuals to broaden their horizons.

5. Recommended Texts, Reference Materials and Websites

Recommended Books

1. Hamid A. Hakim (2007-08). *Fundamentals of Business Mathematics*. Karachi: Meyari Matboat.
2. Nadeem Akhter Siddiqui. (2007-08). *Business Mathematics*. Lahore: Azeem Academy.

Reference Book

1. Paul Metcalf (2006). Cambridge IGCSE Mathematics. Collins
2. Frank S, Budnick (1993). *Applied Mathematics for Business, Economics and the Social Sciences*. Mcgraw Hill

Websites

1. en.wikipedia.org/wiki/Business_mathematics
2. <http://math.about.com/library/weekly/aa101103a.htm>
3. <http://www.libraryofmath.com/business-mathematics.html>
4. <http://www.maa.org/bll/busmath.htm>
5. www.sbp.org.pk
6. <http://math.about.com/library/weekly>
7. <http://www.maa.org/BLL/busmath.htm>
8. <http://www.textbooks.com/Cat.php?SBC=MEX>
9. www.webbertext.com/index.html
10. www.webbertext.com/index.html

6. Definition of Cognitive Levels and Command Words in the Specific Learning Objectives and in Examination Papers

6.1. Definitions of Cognitive Levels (Knowledge, Understanding and Application)

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, summarise, 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, re-arrange, reconstruct/recreate, re-organize, predict consequences etc.

6.2 Definition of Command Words:

Knowledge:

- Define (the term or terms):** Only a formal statement or equivalent paraphrase is required. No examples need to be given.
- Demonstrate:** To show by argument, facts or other evidences the validity of a statement or phenomenon.
- Draw/Sketch:** To make a simple freehand sketch or diagram. Care should be taken with proportions and the clear labelling of parts.
- Factorize:** To resolve or break integers or polynomials into factors.
- Find:** Is a general term that may variously be interpreted as calculate, measure, determine, etc.
In other contexts, describe and give an account of should be interpreted more generally, i.e. the candidate has greater discretion about the nature and the organization of the material to be included in the answer. Describe and explain may be coupled in a similar way to state and explain.
- Identify:** Pick out, recognizing specified information from a given content or situation.
- Measure:** To determine extent, quantity, amount or degree of something as determined by measurement or calculation.
- Plot:** To locate and mark one or more points, on a graph by means of coordinates and to draw a graph through these points.
- Use:** To deploy the required attribute in a constructed response.

Understanding:

- Arrange:** To put different components in an appropriate and systematic way.
- Classify:** To state a basis for categorization of a set of related entities and assign examples to categories.
- Compare:** To list the main characteristics of two entities clearly identifying similarities (and differences).

Compute:	To calculate an answer or result using different mathematical methods.
Conceptualize:	To form or prove a concept through observation, experience, facts or given data.
Construct:	To bring together given elements in a connected or coherent whole.
Convert:	To change or adapt from one system or units to another.
Describe:	To state in words (using diagrams where appropriate) the main points of the topic. It is often used with reference either to a particular phenomena or experiments. In the former instance, the term usually implies that the answer should include reference to (visual) observations associated with the phenomena.
Develop:	To expand a mathematical function or expression in the form of series.
Distinguish:	To identify those characteristics which always or sometimes distinguish between two categories.
Discuss:	To give a critical account of the points involved in the topic.
Eliminate:	To remove a variable from two or more simultaneous equations.
Establish:	To prove correct or true on the basis of the previous examples.
Evaluate:	To judge or assess on the basis of facts, argument or other evidence to come to conclusion.
Explain:	To reason or use some reference to theory, depending on the context.
Express:	Use appropriate vocabulary, language structure and intonation to communicate thoughts and feelings.
Illustrate:	To give clear examples to state, clarify or synthesize a point of view.
Investigate:	Thoroughly and systematically consider a given problem, statement in order to find out the result or rule applied.
Locate:	To determine the precise position or situation of an entity in a given context.

Present:	To write down in a logical and systematic way in order to make a conclusion or statement.
Prove:	To establish a rule or law by using an accepted sequences of procedures on statements.
Simplify:	To reduce (an equation, fraction, etc.) to a simple form by cancellation of common factors, regrouping of terms in the same variables, etc.
Solve:	To work out systematically the answer of a given problem.
Verify:	To prove, check or determine the correctness and accuracy of laws, rules or reference given in the set task.
Write:	To construct full sentences of continuous prose, not abbreviated text.
Application:	
Analyse:	To go beyond using the information for relating different characteristics of the components in given material and for drawing conclusions on the basis of common characteristics.
Apply:	To use the available information in different contexts to relate and draw conclusions.
Calculate:	Is used when a numerical answer is required. In general, working should be shown, especially where two or more steps are involved.
Derive:	To arrive at a general formula by calculating step by step.
Visualize:	To form a mental image about the concept according to the facts and then write down about that image.

HSSC Scheme of Studies²

AKU-EB as a national board offers SSC and HSSC qualifications for both English medium and Urdu medium schools. The revised HSSC Scheme of Studies issued by the Curriculum Wing was implemented from September 2007. At the HSSC level the marks allocated to subjects are based on the revised National Scheme of Studies of 2006. The first HSSC-I part wise (Class XI) examination based on 2006 national curriculum was held in 2009 and HSSC-II (Class XII) will be held in 2010.

HSSC I-II (Classes XI-XII) subjects on offer for the examination

HSSC Part-I (Class XI) Science Group (Pre-Medical)

Subjects	Marks		
	Theory	Practical	Total
English Compulsory-I	100	-	100
Urdu Compulsory-I OR Pakistan Culture-I ^a	100	-	100
Physics-I	85	15	100
Chemistry-I	85	15	100
Biology-I	85	15	100
Total:	455	45	500

HSSC Part-II (Class XII) Science Group (Pre-Medical)

Subjects	Marks		
	Theory	Practical	Total
English Compulsory-II	100	-	100
Urdu Compulsory-II OR Pakistan Culture-II ^a	100	-	100
Islamiyat OR Ethics ^b	50	-	50
Pakistan Studies	50	-	50
Physics-II	85	15	100
Chemistry-II	85	15	100
Biology-II	85	15	100
Total:	555	45	600

a Foreign students may opt Pakistan Culture in lieu of Urdu Compulsory, subject to the board's approval.

b For non-Muslim candidates in lieu of Islamiyat.

Note: Pakistan Studies, Islamiyat / Ethics will be taught in both Classes XI and XII, but the examination will be conducted at the end of Class XII.

² Government of Pakistan September 2007 and May 2003. *Scheme of Studies for SSC and HSSC (Classes IX-XII)*, Islamabad: Ministry of Education, Curriculum Wing.

HSSC Part-I (Class XI) Science Group (Pre-Engineering)

Subjects	Marks		
	Theory	Practical	Total
English Compulsory-I	100	-	100
Urdu Compulsory-I OR Pakistan Culture-I ^a	100	-	100
Physics-I	85	15	100
Chemistry-I	85	15	100
Mathematics-I	100	-	100
Total:	470	30	500

HSSC Part-II (Class XII) Science Group (Pre-Engineering)

Subjects	Marks		
	Theory	Practical	Total
English Compulsory-II	100	-	100
Urdu Compulsory-II OR Pakistan Culture-II ^a	100	-	100
Islamiyat OR Ethics ^b	50	-	50
Pakistan Studies	50	-	50
Physics-II	85	15	100
Chemistry-II	85	15	100
Mathematics –II	100	-	100
Total:	570	30	600

a Foreign students may opt Pakistan Culture in lieu of Urdu Compulsory, subject to the board's approval.

b For non-Muslim candidates in lieu of Islamiyat.

Note: Pakistan Studies, Islamiyat / Ethics will be taught in both Classes XI and XII, but the examination will be conducted at the end of Class XII.

HSSC Part-I (Class XI) Science Group (Science General)

Subjects	Marks		
	Theory	Practical	Total
English Compulsory-I	100	-	100
Urdu Compulsory-I OR Pakistan Culture-I ^a	100	-	100
Any one subject combinations of the following:			
Physics-I	85	15	300/
Mathematics-I	100	-	
Statistics-I	85	15	
Economics-I	100	-	300/
Mathematics-I	100	-	
Statistics-I	85	15	
Economics-I	100	-	300/
Mathematics-I	100	-	
Computer Science-I	75	25	
Physics-I	85	15	300/
Mathematics-I	100	-	
Computer Science-I	75	25	
Mathematics-I	100	-	300
Statistics-I	85	15	
Computer Science-I	75	25	
Total:			500

HSSC Part-II (Class XII) Science Group (Science General)

Subjects	Marks		
	Theory	Practical	Total
English Compulsory-II	100	-	100
Urdu Compulsory-II OR Pakistan Culture-II ^a	100	-	100
Islamiyat OR Ethics ^b	50	-	50
Pakistan Studies	50	-	50
Any one subject combinations of the following:			
Physics-II	85	15	300/
Mathematics-II	100	-	
Statistics-II	85	15	
Economics-II	100	-	300/
Mathematics-II	100	-	
Statistics-II	85	15	
Economics-II	100	-	300/
Mathematics-II	100	-	
Computer Science-II	75	25	
Physics-II	85	15	300/
Mathematics-II	100	-	
Computer Science-II	75	25	
Mathematics-II	100	-	300
Statistics-II	85	15	
Computer Science-II	75	25	
Total:			600

a Foreign students may opt Pakistan Culture in lieu of Urdu Compulsory, subject to the board's approval.

b For non-Muslim candidates in lieu of Islamiyat.

Note: Pakistan Studies, Islamiyat / Ethics will be taught in both Classes XI and XII, but the examination will be conducted at the end of Class XII.

HSSC Part-I (Class XI) Commerce Group

Subjects	Marks		
	Theory	Practical	Total
English Compulsory-I	100	-	100
Urdu Compulsory-I OR Pakistan Culture-I ^a	100	-	100
Principles of Accounting-I	100	-	100
Principles of Economics	75	-	75
Principles of Commerce	75	-	75
Business Mathematics	50	-	50
Total:	500	-	500

HSSC Part-II (Class XII) Commerce Group

Subjects	Marks		
	Theory	Practical	Total
English Compulsory-II	100	-	100
Urdu Compulsory-II OR Pakistan Culture-II ^a	100	-	100
Islamiyat OR Ethics ^b	50	-	50
Pakistan Studies	50	-	50
Principles of Accounting-II	100	-	100
Commercial Geography	75		75
Computer Studies OR Banking	60/ 75	15 -	75
Business Statistics	50	-	50
Total:	600		600

a Foreign students may opt Pakistan Culture in lieu of Urdu Compulsory, subject to the board's approval.

b For non-Muslim candidates in lieu of Islamiyat.

Note: Pakistan Studies, Islamiyat / Ethics will be taught in both Classes XI and XII, but the examination will be conducted at the end of Class XII.

HSSC Part-I (Class XI) Humanities Group

Subjects	Marks
English Compulsory-I	100
Urdu Compulsory-I OR Pakistan Culture-I ^a	100
Any three of the following Elective Subjects	300
1. Civics Elective-I	(100 each)
2. Computer Science-I (75+25 practical)	
3. Economics-I	
4. Education-I	
5. History of Muslim India-I	
6. Islamic Studies-I	
7. Mathematics-I	
8. Statistics-I (85+15 practical)	
9. Psychology-I (85+15 practical)	
10. Sociology-I	
11. English Literature-I	
12. Urdu Literature-I	
Total:	500

HSSC Part-II (Class XII) Humanities Group

Subjects	Marks
English Compulsory-II	100
Urdu Compulsory-II OR Pakistan Culture-II ^a	100
Islamiyat OR Ethics ^b	50
Pakistan Studies	50
Any three of the following Elective Subjects	300
1. Civics Elective-II	(100 each)
2. Computer Science-II (75+25 practical)	
3. Economics-II	
4. Education-II	
5. History of Muslim India-II	
6. Islamic Studies-II	
7. Mathematics-II	
8. Statistics-II (85+15 practical)	
9. Psychology-II (85+15 practical)	
10. Sociology-II	
11. English Literature-II	
12. Urdu Literature-II	
Total:	600

a Foreign students may opt Pakistan Culture in lieu of Urdu Compulsory, subject to the board's approval.

b For non-Muslim candidates in lieu of Islamiyat.

Note: Pakistan Studies, Islamiyat / Ethics will be taught in both Classes XI and XII, but the examination will be conducted at the end of Class XII.