



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)

Published by
The Aga Khan University Examination Board
Bungalow# 233 / E.I.Lines,
Daudpota Road, Karachi, Pakistan.

September 2008
Latest Revision June 2012

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**Higher Secondary School Certificate
Examination Syllabus**

**BUSINESS MATHEMATICS
CLASS XI**

**This subject is examined in both
May and September Examination sessions**

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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 revised part-wise Scheme of Studies. 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) derives directly from the 2007 Ministry of Education Scheme of Studies;
- (b) 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 2 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 6. 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 3.

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.

2. Topics and Student Learning Outcomes of the Examination Syllabus

Part I (Class XI)

Topic	Student Learning Outcomes		Cognitive Levels ¹		
			K	U	A
1. Business Arithmetic	Candidates should be able to:				
1.1 Ratio and Proportion	1.1.1	describe ratio, equivalent ratios and the importance of the order in which the ratio is expressed;		*	
	1.1.2	convert a ratio in its simplest form or lowest term;			*
	1.1.3	calculate continued ratio of more than two quantities (up to four quantities);			*
	1.1.4	find the ratio in which a quantity is increased or decreased;			*
	1.1.5	solve related problems;			*
1.2 Proportion and its Types	1.2.1	explain the concept of proportion;		*	
	1.2.2	describe direct, inverse and compound proportion;		*	
	1.2.3	solve problems involving direct, inverse and compound proportion;			*
1.3 Percentage	1.3.1	describe percentage;		*	
	1.3.2	convert: i. percentage to a fraction and vice versa; ii. percentage to a 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, etc.);			*

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

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			K	U	A
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 problems related to the above mentioned concepts;			*
2. Interest and Annuities		Candidates should be able to:			
2.1 Simple Interest	2.1.1	describe interest, interest rate, period(monthly, bimonthly, quarterly, half yearly, yearly or per annum), principal, accumulated amount, simple interest;		*	
	2.1.2	solve problems related to simple interest;			*
2.2 Compound Interest	2.2.1	define compound interest;	*		
	2.2.2	distinguish between simple and compound interest;		*	
	2.2.3	solve problems related to compound interest;			*
2.3 Annuities	2.3.1	explain annuities and its accumulation factor;		*	
	2.3.2	distinguish between interest and annuities;		*	
	2.3.3	distinguish between annuity due and ordinary annuity;		*	
	2.3.4	define present value of annuity and future value of annuity;	*		
	2.3.5	solve problems related to simple/ordinary annuity.			*

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3. Number Systems		Candidates should be able to:				
3.1	Different Number Systems	3.1.1	describe the following number systems: i. binary (base 2) ii. quinary (base 5) iii. octonary (base 8) iv. decimal (base 10);		*	
		3.1.2	convert: i. decimal numbers (whole and fraction) to binary numbers and vice versa ii. decimal numbers to quinary numbers and vice versa iii. decimal numbers to octonary numbers and vice versa iv. binary numbers to quinary numbers and vice versa v. binary numbers to octonary numbers and vice versa vi. quinary numbers to octonary numbers and vice versa;			*
3.2	Application of Mathematical Operations	3.2.1	Apply arithmetic operations (+, −, ×, ÷) in binary, quinary and octonary number systems.			*
4. Functions and their Graphs		Candidates should be able to:				
4.1	Rectangular Coordinate System and Function	4.1.1	illustrate Cartesian plane(horizontal axis, vertical axis, origin and quadrants, abscissa, ordinate and ordered pair;		*	
		4.1.2	distinguish between independent and dependent variable, domain and range;		*	
		4.1.3	distinguish between binary relation and function;		*	
		4.1.4	find the domain and range of binary relation and function;			*

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				K	U	A
4.2	Linear and Quadratic Functions	4.2.1	distinguish between linear and quadratic functions;		*	
		4.2.2	draw and interpret the graphs of linear and quadratic functions;			*
		4.2.3	locate and interpret x and y intercepts of linear and quadratic functions graphically;		*	
		4.2.4	calculate the vertex and identify the direction (concavity) of parabola;			*
		4.2.5	find the minimum and maximum value of the quadratic functions;			*
4.3	Distance between Two Points	4.3.1	apply the distance formula between the two points on the Cartesian plane to solve related problems;			*
		4.3.2	apply the midpoint formula to solve related problems;			*
4.4	Equation of Straight Line	4.4.1	describe the following forms of straight line: i. slope – intercept form ii. point - slope form iii. two points form iv. intercepts form v. normal form;		*	
		4.4.2	illustrate the above mentioned forms of straight line;		*	
		4.4.3	find the equation of straight line by using the given conditions as discussed above.			*

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5. Linear, Quadratic and Simultaneous Equations		Candidates should be able to:				
5.1	Linear Equation in Single Variable	5.1.1	describe linear equation in one variable;		*	
		5.1.2	solve linear equation in one variable;			*
		5.1.3	solve problems related to linear equations;			*
5.2	Quadratic Equation in Single Variable	5.2.1	describe quadratic equation in one variable;		*	
		5.2.2	solve quadratic equation in one variable by using: i. factorization; ii. method of completing square; iii. quadratic formula;			*
		5.2.3	solve problems related to quadratic equations;			*
5.3	Simultaneous Linear Equations	5.3.1	solve simultaneous linear equations by using the method of elimination and substitution;			*
		5.3.2	solve problems related to simultaneous linear equations.			*
6. Matrices and Determinants		Candidates should be able to:				
6.1	Introduction to Matrices	6.1.1	define matrix with real entries;	*		
		6.1.2	define rows and columns of a matrix, the order of a matrix and equality of two matrices;	*		
6.2	Types of Matrices (up to order 3×3)	6.2.1	describe row matrix, column matrix, rectangular matrix, square matrix, zero/null matrix, identity matrix, scalar matrix, diagonal matrix, symmetric matrix;		*	
		6.2.2	find the transpose of a matrix;			*

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				K	U	A
6.3	Addition and Subtraction of Matrices (up to order 3×3)	6.3.1	discuss whether the given matrices are conformable for addition/subtraction;		*	
		6.3.2	find the addition and subtraction of matrices;			*
		6.3.3	define the additive identity of a matrix;	*		*
		6.3.4	find the additive inverse of a matrix;			*
6.4	Multiplication of Matrices	6.4.1	discuss whether the given matrices are conformable for multiplication;		*	
		6.4.2	find the multiplication of a matrix by a real number;			*
		6.4.3	find the multiplication of two (or three) matrices;			*
		6.4.4	verify with the help of examples that commutative law under multiplication does not hold in general (i.e. $AB \neq BA$);			*
6.5	Multiplicative Inverse of Matrix (up to order 3×3)	6.5.1	describe the determinant of a square matrix;		*	
		6.5.2	calculate the determinant of a matrix;			*
		6.5.3	define singular and non-singular matrix;	*		
		6.5.4	solve problems related to singular and non – singular matrix;			*
		6.5.5	find the adjoint of a matrix and related problems;			*
		6.5.6	define the multiplicative identity of a matrix;	*		
		6.5.7	find the multiplicative inverse of a non-singular matrix A and verify that $AA^{-1} = I = A^{-1}A$, where I is the multiplicative identity matrix;			*
		6.5.8	apply the adjoint method to calculate the inverse of a non-singular matrix;			*
6.6	Solution of Simultaneous Linear Equations	6.6.1	solve a system of two linear equations and word problems in two unknowns using: i. Inverse Matrix method ii. Cramer's rule.			*

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3. Scheme of Assessment

Class XI

Table1: Number of Student Learning Outcomes by Cognitive level

Topic No	Topics	No. of Sub Topics	SLOs			Total
			K	U	A	
1.	Business Arithmetic	4	1	4	8	13
2.	Interest and Annuities	3	2	5	3	10
3.	Number Systems	2	0	1	2	3
4.	Functions and their Graphs	4	0	7	7	14
5.	Linear, Quadratic and Simultaneous Equations	3	0	2	6	8
6.	Matrices and Determinants	6	5	4	1	21
	Total	23	8	23	38	69
	Percentage		12	33	55	100

Table2: Allocation of Marks for the Multiple Choice Questions (MCQs), And Constructed Response Questions (CRQs)

Topic No.	Topics	No. of Sub-Topics	Marks		
			Multiple Choice Questions	Constructed Response Questions	Total
1.	Business Arithmetic	4	4	5	9
2.	Interest and Annuities	3	2	5	7
3.	Number Systems	3	3	5	8
4.	Functions and their Graphs	4	3	5	8
5.	Linear, Quadratic and Simultaneous Equations	3	4	5	9
6.	Matrices and Determinants	6	4	5	9
	Total	23	20	30	50

Table3: Paper Specifications

Topic No.	Topic	Marks Distributions		Total Marks
1.	Business Arithmetic	MCQs 4 @ 1 Mark CRQ 1 @ 5 Marks		9
2.	Interest and Annuities	MCQs 2 @ 1 Mark *CRQs 2 @ 5 Marks each Choose any ONE from TWO		7
3.	Number Systems	MCQs 3 @ 1 Mark *CRQs 2 @ 5 Marks each Choose any ONE from TWO		8
4.	Functions and their Graphs	MCQs 3 @ 1 Mark *CRQs 2 @ 5 Marks each Choose any ONE from TWO		8
5.	Linear, Quadratic and Simultaneous Equations	MCQs 4 @ 1 Mark CRQ 1 @ 5 Marks		9
6.	Matrices and Determinants	MCQs 4 @ 1 Mark CRQ 1 @ 5 Marks		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.

- 3.1 Table 1 indicates the number and nature of SLOs in each topic in class XI. This will serve as a guide in the construction of the examination paper. It also indicates that more emphasis has been given to the understanding (33%), application and higher order skills (55%) in class XI to discourage rote memorization. Table1, however, does not translate directly into marks.
- 3.2 Table 2 shows the distribution of marks. There will be 20 marks of multiple choice questions 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 of duration of 2 hours.
- 3.4 Paper I will be a separately timed multiple choice paper of 30 minutes, administered before the constructed response paper (paper II). There will be no choice in the multiple choice paper.
- 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 chapters in constructed response questions but it may be within the topics.
- 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 organized 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 organizations 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 newspapers etc.
 - 4.2.9 Organise group discussions among students to share their views about current topics.
 - 4.2.10 Whenever possible organize meeting of students with different professionals and intellectuals to broaden their horizons.

5. Recommended Texts, Reference Materials

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. Frank S, Budnick (1993). *Applied Mathematics for Business, Economics and the Social Sciences*. McgrawHill.
2. Shamlu Dudeja (2012), Second edition, *Maths Wise, Book 8*, Karachi: Oxford University Press.

Recommended Websites

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

6. Definition of Cognitive Levels and Command Words

6.1. Definitions 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, 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 :** Only a formal statement or equivalent paraphrase is required. No examples need to be given.
- Identify:** Pick out, recognizing specified information from a given content or situation.
- Write:** To compose, execute or produce in words, characters or figures.

Understanding

- Describe:** To state in words (using diagrams where appropriate) the main points of the topic.
- Discuss:** To give a critical account of the points involved in the topic.
- Distinguish:** To identify those characteristics which always or sometimes distinguish between two categories.
- Explain:** To give reason or use some reference to theory, depending on the context.
- Illustrate:** To give clear examples to state, clarify or synthesize a point of view.
- Interpret:** To translate information from observation, charts, tables, graphs, and written material in a supportable manner.
- Locate:** To place or to set in a particular spot or position.

Application

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.

Convert: To change or adapt from one system or units to another.

Draw: To make a simple freehand sketch or diagram. Care should be taken with proportions and the clear labelling of parts.

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.

Solve: To work out systematically the answer of a given problem.

Verify: To check or determine the correctness and accuracy of Laws or rules by investigation.

HSSC Scheme of Studies²

AKU-EB as a national board offers SSC and HSSC qualifications for both English and Urdu medium schools. The revised HSSC Scheme of Studies issued by the Curriculum Wing was implemented from September 2007. The marks allocated to subjects in the revised National Scheme of Studies have been followed.

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

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

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

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

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

- Foreign students may opt for Pakistan Culture in lieu of Urdu Compulsory, subject to the Board's approval.
- For non-Muslim candidates in lieu of Islamiyat.

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

² Government of Pakistan September 2007. *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			Medium
	Theory	Practical	Total	
English Compulsory-I	100	-	100	English
Urdu Compulsory-I OR Pakistan Culture-I ^a	100	-	100	Urdu English
Physics-I	85	15	100	English
Chemistry-I	85	15	100	English
Mathematics-I	100	-	100	English
Total:	470	30	500	

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

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

- a. Foreign students may opt for 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 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			Medium
	Theory	Practical	Total	
English Compulsory-I	100	-	100	English
Urdu Compulsory-I	100	-	100	Urdu
Pakistan Culture-I ^a				English
Any one subject combinations of the following:				
Physics-I	85	15	300	English
Mathematics-I	100	-		English
*Statistics-I	85	15		English
Economics-I	100	-	300	English / Urdu
Mathematics-I	100	-		English
*Statistics-I	85	15		English
Economics-I	100	-	300	English / Urdu
Mathematics-I	100	-		English
Computer Science-I	75	25		English
Physics-I	85	15	300	English
Mathematics-I	100	-		English
Computer Science-I	75	25		English
Mathematics-I	100	-	300	English
*Statistics-I	85	15		English
Computer Science-I	75	25		English
Total:			500	

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

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

a. Foreign students may opt for 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 Classes XI and XII, but the examination will be conducted at the end of Class XII.

***These subject is offered ONLY in the May examination.**

HSSC Part-I (Class XI) Commerce Group

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

HSSC Part-II (Class XII) Commerce Group

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

- Foreign students may opt for Pakistan Culture in lieu of Urdu Compulsory, subject to the Board's approval.
- For non-Muslim candidates in lieu of Islamiyat.

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

***This subjects are offered ONLY in the May examination.**

HSSC Part-I (Class XI) Humanities Group

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

HSSC Part-II (Class XII) Humanities Group

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

- a. Foreign students may opt for 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 Classes XI and XII, but the examination will be conducted at the end of Class XII.

***These subjects are offered ONLY in the May examination.**