AGA KHAN UNIVERSITY EXAMINATION BOARD

Higher Secondary School Certificate Examination Syllabus

COMPUTER SCIENCE
CLASSES XI-XII

(based on National Curriculum 2000)

Higher Secondary School Certificate Examination Syllabus

COMPUTER SCIENCE
CLASSES XI-XII

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

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For queries and feedback

Address:	The Aga Khan University Examination Board
	Bungalow No. 233/ E.I.Lines, Daudpota Road, Karachi-Pakistan.
Phone:	(92-21) 35224702-10
Fax:	(92-21) 35224711
E-mail:	examination.board@aku.edu
Website:	http://examinationboard.aku.edu
	http://learningsupport.akueb.edu.pk
Facebook:	www.facebook.com/akueb

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. **Aims/Objectives of the National Curriculum (2000)** [1]

The objective s of teaching Computer Science at the secondary level given in the National Curriculum document (2000) are as follows**:**

- " Understand the basic concepts, theories, and laws of computer science and their applications;
- Develop mathematical manipulation skills for designing different language programs in Computer Science;
- Understand and appreciate the role of Information Technology in socio- economic and cultural development of society;
- Develop skills for using and promoting Internet techniques;
- Provide sound but solid basis for further studies in the discipline of Computer Science and Information Technology." (p.2)

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. 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 XI and 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;

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[1] Government of Pakistan (2000), *National Curriculum; Computer Science Classes XI-XII, Islamabad,* Ministry of Education (Curriculum Wing)

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 and 5.

2.1.6   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.

2.2   Specific Rationale of the AKU-EB Computer Science Examination Syllabus

    2.2.1   The syllabus for computer science as prescribed by the Curriculum Wing in National Curriculum (2000) is maintained in its entirety except for a few changes which are made to keep the subject in line with global trends in the field of computer education by making the syllabus more practical and providing "hands on" experiences to students.

    2.2.2   The National Curriculum is based on the assumption that students are exposed to computers initially in Classes XI and XII. Many students will have encountered these elementary techniques much earlier. Therefore there is a need to focus on the latest developments in technology along with the existing devices which will lead to progression in learning computer skills.

    2.2.3   Computer Studies is a practical subject, but the curriculum is more conceptual than practical. However, concepts must be seen to work in practical applications. Schools must ensure that equipment and facilities provided are adequate for the students to be able to work as required by the syllabus.

    2.2.4   The specific learning outcomes as outlined in the syllabus will facilitate both teachers and students to apply the knowledge and skills to new problems and situations.

    2.2.5   The focus on hands-on learning experiences will allow students to test a variety of solutions, analyse results quickly and make predictions.

3. **Topics and Student Learning Outcomes of the Examination Syllabus**

Part-I (Class XI)

Topics		Student Learning Outcomes		Cognitive Levels[2]		
				K	U	A
1. Basics of Information Technology		**Candidates should be able to:**				
1.1	Basic Concepts of Information Technology	1.1.1	define the term 'Information Technology' (IT);	*		
		1.1.2	describe the use of IT in business, education, medicine and, engineering;		*	
		1.1.3	explain the impact of IT in present day society;		*	
1.2	Hardware and Software	1.2.1	define the terms hardware and software;	*		
		1.2.2	describe the four parts of a data processing cycle;		*	
		1.2.3	differentiate the two main categories of computer software;		*	
		1.2.4	explain the use of four specific types of application software with examples;		*	

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[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).

NOTES

				K	U	A
1.3	Input and Output Devices {I/O Processors, Keyboard, Mouse, Character-*Recognition* Microphone, Camera, Scanners, LCD, CRT, Printers (Character, Dot Matrix, Daisy Wheel, Line, Chain, Drum, Laser Jet, Impact and Non-Impact) Plotters (Flatbed, Drum) Memory (Units, Capacity, Address, Memory Operation, Access Methods, Definition of Stated Dynamic Memory)}	1.3.1 1.3.2 1.3.3 1.3.4 1.3.5	describe the function of input and output devices; describe various types of input devices and output devices; classify input devices into keyboards, pointing devices and source entry devices; describe the merits and demerits of various input and output devices, describe the working of input and output devices in a particular environment;		* * * * *	
1.4	Operating System and Computer Programs DOS, UNIX , LINUX and Windows	1.4.1 1.4.2 1.4.3 1.4.4	compare an operating system with a computer program; name different types of operating systems; explain the major functions of operating systems; differentiate a GUI from a command driven operating system.	*	* * *	
1.5	Basic Units of Data Storage, Storage and Memory (Static and Dynamic)	1.5.1 1.5.2 1.5.3 1.5.4	describe the terms memory cell, bit, byte, memory capacity; list different units of measurement of memory; convert from one unit to another; describe different types of memory with examples.	*	* *	*
1.6	Information Systems Development	1.6.1 1.6.2	define system; explain the process and life cycle of system development (problem orientation; analysis, design development, testing and debugging; implementation; future development).	*	*	

NOTES

				K	U	A
2.	**Information Networks**		**Candidates should be able to:**			
	2.1	Basics of the Technology of Workgroup Computing	2.1.1 list the software and hardware required for networking;	*		
			2.1.2 explain the benefits of using a network;		*	
	2.2	The Benefits of E-mail and its Software	2.2.1 define the terms e-mail and its uses;	*		
	2.3	Internet	2.3.1 describe internet and its uses;		*	
	2.4	LAN and WAN	2.4.1 describe the two types of network;		*	
			2.4.2 describe network protocols;		*	
			2.4.3 differentiate the two types of network;		*	
	2.5	Networking Concepts, Modals, Standards,	2.5.1 describe the components of networking;		*	
			2.5.2 explain the uses of networks;		*	
			2.5.3 compare the types of networking modals (server based, client-server, peer to peer);		*	
			2.5.4 define Ethernet and token ring;	*		
			2.5.5 describe the standards of network;		*	
	2.6	Network Topologies	2.6.1 define topology;	*		
			2.6.2 explain different topologies (bus, ring, star, tree and mesh);		*	
	2.7	Data Communication	2.7.1 describe ISO and OSI models;		*	
			2.7.2 describe different layers of OSI;		*	
			2.7.3 describe protocols of networking.		*	

NOTES

			K	U	A
3. Data Communication	**Candidates should be able to:**				
3.1 Introduction of Data Communication, Elements, Modes	3.1.1	define data communication;	*		
	3.1.2	describe the basic components of data communication i.e. transmitter, a medium and a receiver;		*	
	3.1.3	explain the data communication modes (simplex , half duplex, full duplex);		*	
3.2 Types of Data	3.2.1	explain the types of data (text, numeric, image, audio, video);		*	
3.3 Encoding Different Types of Data	3.3.1	explain international code of data encoding and their uses (BCDC,		*	
3.4 Transmission Media and Speed, Methods	3.4.1	describe the types of transmission parallel and serial;		*	
	3.4.2	define the terms bandwidth, base band and broad band;	*		
	3.4.3	differentiate between guided and unguided media;		*	
	3.4.4	describe the use of twisted pair, coaxial cable, fibre optic cable, microwave and satellites;		*	
	3.4.5	distinguish between asynchronous and synchronous transmission of data;		*	
	3.4.6	describe communication media available including telephone lines, cables, microwaves and satellites;		*	
3.5 Modem, Modulation, Demodulation	3.5.1	define a modem, modulation and demodulation;	*		
	3.5.2	name the types of modem.	*		
4. Applications and use of Computers	**Candidates should be able to:**				
4.1 Computers and the Opportunities Offered by their Use	4.1.1	identify the areas where computers are used;	*		
	4.1.2	explain how time and human effort is reduced with the use of computers;		*	

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				K	U	A
4.2	Types of System Used in Everyday Life, Home, Business, Industry	4.2.1	describe the types of computer and its use in education as a teaching tool;		*	
		4.2.2	describe the types, use and purpose of the computer used in banks;		*	
		4.2.3	describe the types and purpose of the computer used in industry;		*	
		4.2.4	describe e-commerce and its benefits for the society;		*	
		4.2.5	explain computer simulation and the purpose of its use;		*	
		4.2.6	describe CAM, CAD and their use;		*	
		4.2.7	describe the use of computers for weather forecasting;		*	
4.3	How Computers can Simplify our Work Practices	4.3.1	discuss how word processor, spread sheet and graphical packages have made life easy.		*	
5. Hardware and Systems Software		**Candidates should be able to:**				
5.1	Computer Architecture	5.1.1	identify the components of a computer (CPU, RAM, ROM, input/output, data bus, address bus, control bus and ports);	*		
		5.1.2	illustrate a typical computer system with a help of a block diagram;			*
		5.1.3	describe CPU(ALU, CU), main memory (RAM, ROM) and their functions;		*	
		5.1.4	describe the size and function of registers, program counter (PC), memory address register (MAR), memory buffer register (MBR), instruction register (IR), stack, accumulator, data register, data address register (DAR);		*	
5.2 Computer Operations		5.2.1	explain simple machine instructions format, instruction codes and processing machine instructions (fetch-decode-execute).		*	

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			K	U	A
6. Security, Copyright and the Law		**Candidates should be able to:**			
6.1	Computer Crime	6.1.1 explain computer crimes by giving real-life examples;		*	
		6.1.2 describe the process of electronic trespassing (hacking);		*	
6.2	Virus and Anti-Virus Issues	6.2.1 define computer virus and explain how to prevent them;		*	
		6.2.2 differentiate between file viruses and boot sector viruses;		*	
		6.2.3 describe various types of viruses i.e. WORM, TROJAN HORSE and etc.		*	
6.3	Data Protection and Legislation	6.3.1 define software piracy;	*		
		6.3.2 list some important data protection rules and discuss data protection legislation;		*	
		6.3.3 define software piracy and discuss the impact of software piracy on the security;		*	
		6.3.4 discuss the privacy acts.		*	
7. Use of Software		**Candidates should be able to:**			
7.1	Operating Systems (Windows)	7.1.1 define a GUI based operating system;	*		
		7.1.2 identify various features of operating systems;	*		
		7.1.3 demonstrate the use of GUI components of operating system (WINDOWS);			*P
		7.1.4 demonstrate the basics of file and disk management;			*P
		7.1.5 demonstrate printing in GUI and print control jobs;			*P
7.2	Word Processing (Using MS-Word 2000)	7.2.1 define word processor;	*		
		7.2.2 demonstrate the use of font, paragraph, page formatting and printing;			*P
		7.2.3 demonstrate the use of tables, table related tasks;			*P
		7.2.4 describe the concept of the clipboard;		*	
		7.2.5 demonstrate the use of text boxes, graphics and word art options;			*P

* P= practical activities to be carried out during the teaching learning process however question in the written paper can also be asked about the application of the concept.

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				K	U	A
7.3	Spreadsheet (Using MS-Excel 2000)	7.3.1	describe spreadsheets packages;		*	
		7.3.2	describe the uses of spreadsheets in daily life;		*	
		7.3.3	use spread sheet layout;			*P
		7.3.4	format and customize data;			*P
		7.3.5	write formulae, use functions and name ranges;			*P
		7.3.6	generate basic types of charts;			*P
		7.3.7	print worksheets and charts;			*p
7.4	Internet, Internet Browsing and E-mail	7.4.1	describe the keywords (necessary elements) of internet (e.g. URL, http://, www);		*	
		7.4.2	discuss the advantages and disadvantages of internet;		*	
		7.4.3	define and demonstrate browsing (using Internet Explorer);			*
		7.4.4	demonstrate the use of addresses, links and downloading, and the structure of a basic internet address;			*P
		7.4.5	demonstrate searching through Internet;			*P
		7.4.6	describe and demonstrate download and file compression;			*P
		7.4.7	describe and demonstrate the of use e-mail;			*P
		7.4.8	describe and demonstrate the use of forums on the internet (newsgroups).			*P

NOTES

Part-II (Class XII)

					K	U	A
8. Basics of Database			**Candidates should be able to:**				
	8.1	Basic Concepts	8.1.1	define the word database;	*		
			8.1.2	explain the object of a database (table, form, query, report, relationship);		*	
			8.1.3	distinguish between fields and records;		*	
	8.2	Using Access	8.2.1	demonstrate how to start access and its environment;			*
			8.2.2	explain the use of wizard with access;		*	
			8.2.3	demonstrate the use of help while working in access.			*
9. Design and Creation			**Candidates should be able to:**				
	9.1	Create New Database	9.1.1	create a blank database and save with database extension;			*P
			9.1.2	create table in the design / data sheet view;			*P
			9.1.3	use appropriate field names and select data types;			*
	9.2	Modification	9.2.1	insert and delete field;			*
			9.2.2	set a primary key on an appropriate field;			*P
			9.2.3	print a table;			*P
	9.3	Relationships	9.3.1	create a relationship between existing tables;			*P
			9.3.2	alter the tables in design view when required.			*
10. Data Manipulation			**Candidates should be able to:**				
	10.1	Insertion and Editing Record	10.1.1	insert records in data sheet view;			*
			10.1.2	view, edit and delete records;			*
	10.2	Searching and Sorting Records	10.2.1	find and replace records into the database;			*
			10.2.2	sort records in ascending and descending order.			*

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11. Queries, Forms & Reports		**Candidates should be able to:**				
11.1 Using Queries	11.1.1	define query and types of queries;		*		
	11.1.2	create query in design view or by using wizard;				*
	11.1.3	add a calculated field into a table;				*P
11.2 Using Forms	11.2.1	define forms and list some advantages;		*		
	11.2.2	create different types of forms through form wizard;				*P
	11.2.3	edit the forms (field, layout and style);				*P
11.3 Using Reports	11.3.1	define reports and its types that can be produced using the wizard;		*		
	11.3.2	create reports using report wizard;				*P
	11.3.3	format/ modify the report according to the requirement.				*P
		== "C" LANGUAGE (option I)" ==				
12. Introduction to C Language		**Candidates should be able to:**				
12.1 High Level Programming Language	12.1.1	define high level programming language;		*		
	12.1.2	differentiate between high level programming language and low level programming language;			*	
12.2 Basic Structure of C Program	12.2.1	describe 'C' language;			*	
	12.2.2	explain the advantages of 'C' language over other programming language;			*	
12.3 The Environment of C	12.3.1	demonstrate the editor of 'C' language and explain its menus;				*
	12.3.2	explain the basic structure of 'C' program by using block diagram/flow chart.			*	

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13. Creating C Program	**Candidates should be able to:**				
13.1 Creating, Editing and Saving a Source Program	13.1.1	create a simple 'C' program by opening a 'C' editor and saving it;			*
	13.1.2	explain setting of header files (include & lib) from option menu;		*	
13.2 Compiling, Linking and Executing a Program	13.2.1	explain the compilation process with the source program;		*	
	13.2.2	demonstrate the steps of creating and executable file with the Linker (.cpp,.obj,.exe);			*
	13.2.3	explain the uses of comments in 'C' language.		*	
14. Fundamentals of C Language	**Candidates should be able to:**				
14.1 Data Types	14.1.1	define different data types;	*		
	14.1.2	list the number range of numeric data (int, long, float and double);	*		
14.2 Input/ Output Statements	14.2.1	explain the use of printf, scanf, format specifier, field with specifier and getch with the help of a program;		*	
	14.2.2	create a program which prints a text of 4 lines consisting of characters, integer values and floating point values using printf statement;			*P
	14.2.3	demonstrate escape sequences;			*P
	14.2.4	create a program that reads and prints the data using the escape sequences;			*P
14.3 Functions and Subroutines	14.3.1	define functions and subroutines;	*		
	14.3.2	explain the functions of built in functions with the relevance to their importance strings (ASC, CHR, LEN, LEFT, RIGHT, MID), mathematics (RND, SQR)		*	

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			K	U	A
14.4 Operators	14.4.1	describe operators (arithmetic, relational, logical);		*	
	14.4.2	create a program which uses operators (calculate the area of a triangle, volume of spheres and arrange the resultant variable in ascending order).			*P
15. Control Statements	**Candidates should be able to:**				
15.1 Loops	15.1.1	explain in detail FOR-NEXT (counter) and DO-WHILE while (controlled) loops;		*	
	15.1.2	write a program which uses FOR loop statement; (generate the multiplication table for any number);			*P
	15.1.3	create a program which uses while loop and nested while loop;			*P
	15.1.4	create a program to find factorial of n using while loop, read values of n using *scanf*;			*P
15.2 Conditional Statements	15.2.1	describe certain conditions to use IF-ELSE, ELSE -IF, switch statement and conditional operators;		*	
	15.2.2	create a program to input student's marks of five subjects and indicate its overall grade using nested IF-ELSE;			*P
	15.2.3	create a program which uses a switch statement and breaks the program if certain condition is observed.			*P

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16. Functions	**Candidates should be able to:**				
16.1 Uses of Functions	16.1.1	explain functions and its advantages;		*	
	16.1.2	distinguish built-in functions and user-defined functions;		*	
	16.1.3	explain the built-in functions (ABS, COS, LOG, TAN, SIN, SQRT);		*	
	16.1.4	create a function, which generates factorial of n and calls this functions in the 'main' program;			*P
16.2 Arguments	16.2.1	explain variations of functions;		*	
	16.2.2	create a user-defined function which takes multiple arguments to draw geometrical shapes. Use height and width as passing arguments.			*P
17. File Handling	**Candidates should be able to:**				
17.1 Opening, Reading and Writing a File	17.1.1	demonstrate opening and closing a file;			*
	17.2.1	apply reading, writing and appending to a file through a programme.			*

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OR
=== VISUAL BASIC (option II)" ===

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			K	U	A
18. Introduction to Visual Basic (VB)	**Candidates should be able to:**				
18.1 GUI Base Programming	18.1.1	describe the process of visual program design and development;		*	
	18.1.2	explain the term even driven programming and outline the concepts of object, properties and methods;		*	
18.2 Elements in Visual Basic Environments	18.2.1	demonstrate the visual basic environment;			*
	18.2.2	manipulate between control tool box, project explorer, properties window, object view and code view;			*

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				K	U	A
18.3	Starting Visual Basic	18.3.1	demonstrate how to start VB place controls on the forms save the form and project;			*P
		18.3.2	distinguish between three VB modes (design time, runtime, and break time);		*	
		18.3.3	demonstrate the use of multiple forms.			*
19. Working with Controls		**Candidates should be able to:**				
19.1	Basic Control (Label, Text, Command Button, Checkbox, Option Button, Forms, Combo Box, Scroll Bar, Image Control, Shapes, Directory Drive and File List Box)	19.1.1	explain control options and their major properties;		*	
		19.1.2	create a simple form to perform mathematical operations on at least two numbers by using textbooks, label and command button;			*P
		19.1.3	create a simple form to perform arithmetic operations on a given number;			*P
		19.1.4	demonstrate the use of list box, combo box check box and option.			*P
20. Variables Constants and Calculation		**Candidates should be able to:**				
20.1	Data Types	20.1.1	distinguish between variables and constants;		*	
		20.1.2	differentiate among major data types;		*	
20.2	Arrays	20.2.1	explain single and dimensional arrays;		*	
		20.2.2	apply a single dimensional array to a program;			*
20.3	Functions and Subroutine	20.3.1	define functions and subroutines;	*		
		20.3.2	explain the built-in functions with the relevance to their importance strings (ASC,CHR,LEN,LEFT,RIGHT,MID,) math (RND,SQR,SIN,COS,TAN,ABS) conversion (HEX,OCT,CVAL,CSTR);		*	
		20.3.3	create a function which returns area of a circle of a given radius;			*

NOTES

			K	U	A
20.4 Operators	20.4.1	describe operators (arithmetic, relational, logical);		*	
	20.4.2	create a program to generate marks sheet on the screen.			*P
21. Control statement	**Candidates should be able to:**				
21.1 Loop	21.1.1	explain in detail counter (FOR-NEXT) and controlled (DO-WHILE) loops;		*	
	21.1.2	create a form to display table of any given integer;			*P
	21.1.3	create a form which generate series of numbers within given limits use for and DO- WHILE loops;			*P
	21.1.4	create a program to find factorial of a number using for any loop statement;			*P
21.2 Conditional Statement	21.2.1	describe under which condition IF-THEN-ELSE is used.		*	
22. Database Programming Using Visual Basic (VB)	**Candidates should be able to:**				
22.1 Data Access Objects	22.1.1	demonstrate the connectivity of database (ms-access with VB application);			*
	22.1.2	show the use of a form to save/retrieve data from the user in text box and save it to MS access table (ADO, DC and data).			*P
23. Advance Active X Control	**Candidates should be able to:**				
23.1 Using Advance ACTIVE X DATA CONTROL	23.1.1	describe the term ACTIVE X DATA OBJECTS (ADO) and ACTIVE X DATA CONTROL;		*	
	23.1.2	demonstrate the use of advance ACTIVE X CONTROL with form;			*P
23.2 Drawing with VB	23.2.1	draw different shapes with pset, circle and line method.			*P

NOTES

4.   **Scheme of Assessment**

   Class XI
   Table 1: Number of Student Learning Outcomes by Cognitive Level

Topic No.	Topics	No. of sub-Topics	SLOs			Total
			K	**U**	**A**	
1.	Basics of Information Technology	6	5	16	1	22
2.	Information Networks	7	4	13	0	17
3.	Data Communication	5	4	9	0	13
4.	Application and Use of Computers	3	1	9	0	10
5.	Hardware and Systems Software	2	1	3	1	5
6.	Security, Copyright and the Law	3	1	8	0	9
7.	Use of Software	4	3	5	17	25
	Total	**30**	**19**	**63**	**19**	**101**
	Percentage		**19**	**62**	**19**	**100**

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

Topic No.	Topics	No. of Sub-Topics	Marks			
			Multiple Choice Questions	**Constructed Response Questions**	**Extended Response Questions**	**Total**
1.	Basics of Information Technology	6	6	10	0	14
2.	Information Networks	7	6	10	0	14
3.	Data Communication	5	6	6	0	12
4.	Application and Use of Computers	3	4	10	0	10
5. 6.	Hardware and Systems Software Security, Copyright and the Law	5	4	0	10	14
7.	Use of Software	4	4	9	0	11
	Total	**30**	**30**	**45**	**10**	**85**
	Practical					15
	Total					**100**

Table 3: Paper Specifications

Topic No.	Topics	Marks Distribution			Total Marks
1.	Basics of Information Technology	MCQs 6 @ 1Mark each CRQs 2 @ 5 Marks each			16
2.	Information Networks	MCQs 6 @1 Mark each CRQs 2 @ 5 Marks each			16
3.	Data Communication	MCQs 6 @ 1 Mark each CRQ 1 @ 6 Marks			12
4.	Application and Use of Computers	MCQs 4 @ 1 Mark each CRQs 2 @ 5 Marks each			14
5.	Hardware and Systems Software	MCQs 4 @1 Mark each *ERQ 1 @ 10 Marks Choose any ONE from TWO			14
6.	Security, Copyright and the Law				
7.	Use of Software	MCQs 4 @ 1 Mark each CRQ 1 @ 4 Marks CRQ 1 @ 5 Marks			13
	Total	**MCQs 30**	**CRQs 45**	**ERQ 10**	**85**
	Practical				15
	Total				**100**

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

Class XII
Table 4: Number of Student Learning Outcomes by Cognitive Level

Topic No.	Topics	No. of Sub-Topics	SLOs			Total
			K	U	A	
8	Basics of Database	2	1	3	2	6
9	Design and Creation	3	0	0	8	8
10	Data Manipulation	2	0	0	4	4
11	Queries, Forms and Reports	3	3	0	6	9
12	Introduction to C Language	3	1	4	1	6
13	Creating C Program	2	0	3	2	5
14	Fundamentals of C Language	4	3	3	4	10
15	Control Statements	2	0	2	5	7
16	Functions	2	0	4	2	6
17	File Handling	1	0	0	2	2
	Total	**24**	**8**	**19**	**36**	**63**
	Percentage		**13**	**30**	**57**	**100**

OR

Topic No.	Topics	No. of Sub-Topics	SLOs			Total
			K	U	A	
8	Basics of Database	2	1	3	2	6
9	Design and Creation	3	0	0	8	8
10	Data Manipulation	2	0	0	4	4
11	Queries, Forms and Reports	3	3	0	6	9
18	Introduction to VB Language	3	0	3	4	7
19	Working with Controls	1	0	1	3	4
20	Variables Constants and Calculation	4	1	5	3	9
21	Control Statement	2	0	2	3	5
22	Database Programming using VB	1	0	0	2	2
23	Advance Activex Control	2	0	1	2	3
	Total	**23**	**5**	**15**	**37**	**57**
	Percentage		**9**	**26**	**65**	**100**

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

Topic No.	Topics	No. of Sub-Topics	Marks			
			Multiple Choice Questions	Constructed Response Questions	Extended Response Questions	Total
8	Basics of Database	2	2	5	0	6
9	Design and Creation	3	5	5	0	9
10	Data Manipulation	2	2	4	0	4
11	Queries, Forms and Reports	3	3	6	0	9
12	Introduction to C Language	3	3	5	0	6
13	Creating C Program	2				
14	Fundamentals of C Language	4	11	10	10	30
15	Control Statements	2				
16	Functions	2	3	6	0	8
17	File Handling	1	1	4	0	3
	Total	**24**	**30**	**45**	**10**	**85**
	Practical					15
	Total					**100**

OR

Topic No.	Topics	No. of Sub-Topics	Marks			
			Multiple Choice Questions	Constructed Response Questions	Extended Response Questions	Total
8	Basics of Database	2	2	5	0	6
9	Design and Creation	3	5	5	0	9
10	Data Manipulation	2	2	4	0	4
11	Queries, Forms and Reports	3	3	6	0	9
18	Introduction to VB Language	3	3	5	0	6
19	Working with Control	1				
20	Variables Constants and Calculation	4	11	10	10	30
21	Control Statement	2				
22	Data base Programming using VB	1	3	6	0	8
23	Advance Active Control	2	1	4	0	3
	Total	**23**	**30**	**45**	**10**	**85**
	Practical					**15**
	Total					**100**

Table 6: Paper Specifications

Topic No.	Topics	Marks Distribution			Total
8.	Basics of Database	MCQs 2 @ 1 Mark each CRQ 1 @ 5 Marks			7
9.	Design and Creation	MCQs 5 @ 1 Mark each CRQ 1 @ 5 Marks			10
10.	Data Manipulation	MCQs 2 @ 1 Mark each CRQ 1 @ 4 Marks			6
11.	Queries, Forms and Reports	MCQs 3 @ 1 Mark each CRQ 1 @ 6 Marks			9
12. OR 18.	Introduction to C Language **OR** Introduction to VB Language	MCQs 3 @1 Mark each CRQ 1 @ 5 Marks			8
13. OR 19.	Create C Program **OR** Working with Control	MCQs 11 @ 1 Mark each CRQ 1 @ 5 Marks CRQ 1 @ 5 Marks *ERQ 1 @ 10 Marks Choose any ONE from TWO			31
14. OR 20.	Fundamentals of C Language **OR** Variable Constants and Calculations				
15. OR 21.	Control Statements				
16. OR 22.	Functions **OR** Database Programming Using VB	MCQ 3 @ 1 Mark each CRQ 1 @ 6 Marks			**9**
17. OR 23.	File Handling **OR** Advance Active Control	MCQ 1 @ 1 Mark each CRQ 1 @ 4 Marks			**5**
	Total	**MCQs 30**	**CRQs 45**	**ERQ 10**	**85**
	Practical				15
	Total				**100**

* Extended Response Questions (ERQs) will require answers in more descriptive form. The answers will be in a paragraph form 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 XI and XII. This will serve as a guide in the construction of the examination paper. It also indicates that more emphasis has been given to Understanding (62% and 30% OR 26%), Application and higher order skills (19% and 57% OR 65%) 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 XI and one at the end of Class XII.

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 55 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   Practical examination will be conducted separate from the theory paper. It will be based on the list of practical activities listed in the examination syllabus.

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

4.8   Practical exams to assess performance skills will carry 15 marks in class XI and 15 marks in class XII.

4.9   The practicals identified in the SLOs by a "P" should be carried out throughout the academic year. It is essential for each school to equip its computer lab with software, hardware, devices, etc. according to the requirements of the practicals. Each school will be responsible to make sure that each student is provided the opportunity to do the practicals.

List of practicals is attached as annex B.

5.   Teaching-Learning Approaches and Classroom Activities

5.1   Diagrams and models of the basic computer components should be used to illustrate their functions.

5.2   There should be demonstrations of actual samples or illustration of peripheral devices and of system software, such as Windows.

5.3   E-mail facility should be made available in the lab

5.4   Internet facilities should be used for research purposes.

5.5   Guidance for the system operation activities and on a creative, self exploratory basis for production activities.

5.6   Students should be encouraged to use sample documents on disks that can be opened, modified and re-saved after applying more difficult tasks.

5.7   Newspaper columns and IT magazines should be used / consulted to stay abreast of new developments

6. Recommended Text and Reference Material

Recommended Books

1. Heder, Sajjad. *A Textbook of Computer Science for Class XI and XII*. National Text Book Foundation, Islamabad.
2. Punjab Textbook Board. (2007). *A Textbook of Computer Science for Class XII*. Lahore: Punjab Book Board.
3. Sarwar, Gul Shazad, *Computer Studies for XI and XII. Iqra publishers, Karachi.*

Reference Books

1. Norton, Peter. (2001). *Introduction to Computers*, Singapore: McGraw- Hill Co.
2. Long Larry and Nancy. (Tenth edition). *Computers Information Technology in Perspective.* New Jersey, Prentice Hall.
3. Gul Shahzad Sarwar. *Computer Studies for Class XI and XII.* Karachi: Iqra Publisher.
4. Kochan, S. G, *Programming in C* (3rd ed). India: Person Education.
5. Baig, M, (2004). *Computer Science 11 and 12.* Lahore: Punjab Text Book Board.
6. Warner, S, (2004). *Visual Basic 6.* India: Tata McGraw Hill.
7. Bradley, J. C. (2006). *Programming in Visual Basic.* India: Tata McGraw Hill.
8. Hanley, J.R and Koffnman E. B, (2004) *Problem Solving and Program design in C* (4th Ed) India: Person Education.

Note:

Although there is a recommended text book, teachers have to consult suggested resource material along with different manuals available for application software available in the market. Particular emphasis should be laid upon web-based material. Every student of this course should be an experienced web browser.

Recommended Websites

1. History of computers   www.tcm.org/history
2. Manufacturers   www.digital.com
3. Input devices   www.pctechguide.com
4. Output devices   www.lexmark.co.uk
5. Backing store   sourcemagazine.com/archive/999/feature1.asp
6. Application software   www.microsoft.com
                             www.shareware.com
                             www.egghead.com
7. Word processing /DPT   www.microsoft.com/office/ word
8. Databases   www.microsoft.com
9. Spreadsheets   www.lotus.com

Microsoft Access

1. http://www.bcschools.net/staff/AccessHelp.htm
2. http://www.brainbell.com/tutorials/ms-office/Access_2003/
3. http://www.officetutorials.com/accesstutorials.htm
4. http://www.learnaccessnow.com/

Visual Basic 6.0

1. http://www.profsr.com/vb/vbless01.htm
2. http://www.cs.iupui.edu/~aharris/220vb/slides.html

C Language

1. http://www.cplusplus.com/doc/tutorial/
2. http://www.physics.drexel.edu/students/courses/Comp_Phys/General/C_basics/

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, organising parts, making links, summarising, 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: differentiate, analyse, show relationship, propose an alternative, prioritise, give reasons for, categorise, illustrate, corroborate, compare and contrast, create, design, formulate, integrate, rearrange, reconstruct/recreate, reorganise, predict consequences, etc.

Knowledge

Define: A formal statement about a term or function without any examples.

Identify: Select, choose and write the required names, devices, items or functions.

List: Write the names of required devices, items, terms, functions or files.

Name: Mention the commonly used word for an object.

Understanding

Classify: State a basis for categorization of a set of related entities and assign examples to categories.

Compare: List the main characteristics of two entities clearly identifying similarities and differences.

Describe: State in words (using diagram where necessary) the main points of the topic. It is often used with reference to a particular phenomenon or experiment.

Discuss: Express views in a logical and lucid way considering all aspects of a matter under discussion and drawing a conclusion.

Differentiate/ distinguish: Identify those characteristics which always are helpful to tell two categories apart.

Explain: Make an idea, situation or problem clear by describing it in detail revealing relevant data or facts.

Application

Apply: Practical use of software or hardware according to a stated requirement.

Add: Include or combine two or more factors together.

Alter/ Change: Implies switching from one programme to another or shifting from a given computer characteristic to a desired one.

Create: Develop a new software document or graphic from one's own experience.

Convert: Change or adapt from one system or units to another.

Demonstrate/ show: Display the ability to use the device with confidence.

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

Edit: Prepare for presentation by correcting, revising or adapting.

Format: To arrange data for computer input or output, such as the number and size of fields in a record or the spacing and punctuation of information in a report.

Find: Locate a feature or obtain as from a graph.

Generate: Create a report or a document or a file according to given criteria.

Insert: Place or put into something e.g. table/ picture/ shapes/ header etc into documents.

Illustrate: Show clearly by using appropriate examples or diagrams/ sketches.

Manipulate: To adapt or change (accounts, figures, etc.) to suit one's purpose or advantage.

Print: To produce (a text, picture, etc.) on a paper or other material using a printer.

Set: Arrange or place a function or software for further processing.

Sort: Arrange or order by class or category.

Use: Deploy the required attribute in a constructed response or apply any computer skill of software in a practical way.

View: Notice or bring to screen the required document or file.

Write: Implies making a list of desired entities or functions.

HSSC Scheme of Studies[3]

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**	

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.

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[3] 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 Pakistan Culture-I ^a	100	-	100	Urdu English
Any one subject combinations of the following:				
Physics-I	85	15		English
Mathematics-I	100	-	300	English
*Statistics-I	85	15		English
Economics-I	100	-		English / Urdu
Mathematics-I	100	-	300	English
*Statistics-I	85	15		English
Economics-I	100	-		English / Urdu
Mathematics-I	100	-	300	English
Computer Science-I	85	15		English
Physics-I	85	15		English
Mathematics-I	100	-	300	English
Computer Science-I	85	15		English
Mathematics-I	100	-		English
*Statistics-I	85	15	300	English
Computer Science-I	85	15		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		English
Mathematics-II	100	-	300	English
*Statistics-II	85	15		English
Economics-II	100	-		English / Urdu
Mathematics-II	100	-	300	English
*Statistics-II	85	15		English
Economics-II	100	-		English / Urdu
Mathematics-II	100	-	300	English
Computer Science-II	85	15		English
Physics-II	85	15		English
Mathematics-II	100	-	300	English
Computer Science-II	85	15		English
Mathematics-II	100	-		English
*Statistics-II	85	15	300	English
Computer Science-II	85	15		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 <u>ONLY</u> 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 **OR** -	75	English
Business Statistics	50	-	50	English
Total:	**600**		**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.

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

HSSC Part-I (Class XI) Humanities Group

Subjects	Marks	Medium
English Compulsory-I	100	English
Urdu Compulsory-I **OR**	100	Urdu
Pakistan Culture-I [a]		English
Any three of the following Elective Subjects	300	
1. Civics-I	(100	English / Urdu
2. Computer Science-I (85+15 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**	100	Urdu
Pakistan Culture-II [a]		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 (85+15 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.

List of Practical

Class XI

S. No.	OBJECTIVE	EQUIPMENT	SOFTWARE
1	Use of Start Menu; Manage Program Group and Document Group; access to Search Group; Customize the Desktop	PC	Windows
2	Use of Windows Help	PC	Windows
3	Use of Windows Accessories: Word Pad; Calculator; Paint	PC	Windows
4	Managing files and folders using My Computer; Managing files and folders using Windows Explorer; Managing Recycle Bin Operations	PC	Windows
5	Installation of given printer driver; Setting up different properties of printer; Managing the queue of printing jobs	PC Printer	Windows
WORD PROCESSING			
1	Open and save files in specified path or a new folder Selection of text by different methods and applying different operations, Copying, moving (by clipboard and drag & drop method) and deletion	PC	Microsoft office Word
2	Formatting text (Bold, Underline, Font, Colour etc)	PC	Word
3	Use of Undo and Redo	PC	Word
4	Use of Text Alignment, Indenting and managing space. use of bullets and numbering	Pc	Word
5	Use of Page Setup including Page Margin, Size, Paper Source and Layout	PC	Word
6	Skills of Printer Settings	PC	Word

S. No.	OBJECTIVE	EQUIPMENT	SOFTWARE
7	Use of Tables and Columns	PC	Word
8	Use of Spell Check Grammar and Thesaurus	PC	Word
9	Use of shortcuts	PC	Word
	SPREADSHEET		
10	Inserting & Deleting Cells, Rows and Columns	PC	Excel
11	Managing Worksheets	PC	Excel
12	Formatting and Customizing Data	PC	Excel
13	Use of Formulas and functions (formatting numbers, decimal places, column & rows setup etc)	PC	Excel
14	Drawing of different types of charts	PC	Excel
15	Use of Page Setup and Printing Configurations	PC Printer	Excel
	INTERNET AND EMAIL		
17	Send/receive email to single user, multiple users	PC Internet service	MS office
18	Attach/Detach files with mail	PC Internet service	Ms office
19	Browsing Internet	PC Internet service	Explorer Search engine (Google or hotmail)
21	Proper use of search engines	PC Internet connection	Explorer Search engine Google or hotmail)

Class XII

S. No.	OBJECTIVE	EQUIPMENT	SOFTWARE
	DATA BASE		
1	Creating different tables and assign primary key	PC	Access
2	Create simple queries using wizard and design view	PC	Access
3	Create relationship between tables	PC	Access
4	Create simple forms using wizards and design view	PC	Access
5	Create reports using wizards and design view	PC	Access
6	Use of summary and calculated fields	PC	Access
	C LANGUAGE		
1	Writing a program which prints a text of 4 lines consisting of characters, integer values and floating point values using printf statement.	PC	C compiler
2	Writing a program that reads and prints the data using the Escape Sequence, (Asking the name, age, height and gender of the student using scant and print statements)	PC	C compiler
3	Writing a program which uses 'for' loop statement, (Generate the multiplication table from 2 to 20)	PC	C compiler
4	Nested 'while' loop, (Use 'for' loop and continue the process in 'while' loop satisfying this condition)	PC	C compiler
5	Finding the factorial of N using 'while' loop, read value of N using scant and print the factorial of various N	PC	C compiler
6	Draw a checkerboard and print it using if-else statement, and extend the program using Nested if-else	PC	C compiler
7	Writing a program which uses a 'switch' statement and breaks the program if certain condition is observed. Repeat the program with 'case' statement	PC	C compiler
8	Writing a function, which generates factorial of N and calls this function in the 'main' program	PC	C compiler
9	Write a program which uses multiple arguments in function to draw a rectangle. Use height width as passing argument	PC	C compiler

S. No.	OBJECTIVE	EQUIPMENT	SOFTWARE
1	Create a simple form to add two numbers using text box and buttons.	PC	VBasic
2	Create a form to perform other arithmetic functions (multiply, divide, subtract)	PC	VBasic
3	Create a form to display the table of a given integer.	PC	VBasic
4	Create a program that generates the series of numbers within given limits using FOR loop.	PC	VBasic
5	Create a program that generate the series of numbers within given limits using DO-WHILE loop.	PC	VBasic
6	Find the factorial of N using any loop statement, read value from a text box and print the result in another text box	PC	VBasic
7	Develop a program to read salary from the text box, calculate its tax depending upon the bracket in which it falls. (Using if-else)	PC	VBasic
8	Create a function which returns area of circle of a given radius.	PC	VBasic
9	Use a form to save/retrieve data from user in text box and save it in text box and save it to MS-ACCES table. (Note: Data1 needs to work only if the ACCESS table is in Access 97 or older format.)	PC	VBasic
10	Create a form to Add, Edit and delete a record to / from MS-ACCESS.	PC	VBasic
11	Use different property sheets to change the appearance and format of text item.	PC	VBasic
12	Use property sheet to modify the form background properties.	PC	VBasic