PUNJAB BOARD OF TECHNICAL EDUCATION
21-A, Kashmir Block Allama Iqbal Town, Lahore
www.pbte.edu.pkTel # 042-99260273 email: rnd.pbte@gmail.com
SAY NO TO CORRUPTION

No: PBTE/R&D/2026/001 Dated: 05-01-2026.

NOTIFICATION

It is intimated that the PBTE, vide communiqué No: PBTE/R&D/2025/630-B dated 05-09-2025, disseminated a notification for the information of all concerned regarding the decision of the Governing Body of PBTE, taken in its 3rd meeting of 2025 held on 20-08-2025, under agenda item No: 06, to start the Diploma in Information Technology (DIT-02 Years) in its affiliated institutes with the following conditions:

I. The institutes located within the province of Punjab shall be granted affiliation for DIT (02 year) program based on the registration certificate of DIT (02 Years) / ICS or equivalent issued by the Director Public Instruction (Colleges), Punjab.

II. The institutes located outside the province of Punjab shall be granted affiliation with PBTE for DIT (02 Years) program upon submission of the registration certificate of DIT (02 Years) / ICS or equivalent issued by the concerned registering authority / department.

It is further intimated that the same criteria / procedure shall be applicable for the public / private education / training service providers (TSPs) intending to offer short courses in the IT related field.

It is added that the Governing Body of PBTE in its 6th meeting held on 27-11-2025 under table agenda item No: 02 approved extending affiliation opportunities for institutes intending to offer the DIT (02 Year) program based on DAE / HSSC registration certificates. Additionally, the affiliation certificate issued by the University falling within the jurisdiction of the province of Punjab as well as outside of the province of Punjab (for IT sector) shall be considered as blanket registration certificate when processing DIT (02 Year) affiliation cases.

(Muhammad Hafeez)
SECRETARY

Copy for information to:

1- PA to Chairperson, PBTE.
2- PA to COE, PBTE.
3- The Principals, Affiliated Institutes.
4- System Analyst, PBTE.
5- Senior Research Officer, PBTE.
6- Research Officer (V), PBTE.
7- AS (Recognition) Section, PBTE.
8- AS (Registration) Section, PBTE.
9- ACE (P&P-I) Section, PBTE.
10- ACE (P&P-II) Section, PBTE.
11- ACE (C&V) Section, PBTE.
12- ACE (NSU) Section, PBTE.
13- AS (Certificate) Section, PBTE.
14- In-Charge (P&S) Section, PBTE.
15- In-Charge (Operations wing), PBTE Lahore.
16- Web Administration PBTE, to upload the notification.
17- PRO with the request for awareness of general public through print and social media.

CamScanner

PUNJAB BOARD OF TECHNICAL EDUCATION

21-A KASHMIR BLOCK, ALLAMA IQBAL TOWN LAHORE
Website: www.pbte.edu.pk, PH: 99260266

No. PBTE/R&D/2023/426 Dated 06-11-23

NOTIFICATION

Consequent upon the decision of the Inter Boards Coordination Commission (IBCC) in its 177th meeting held on 9th-10th, October, 2023 notified vide No F 7-1/2007/IBCC-Imp/177-08/2023 dated 23-10-2023 wherein the forum has approved two years Diploma in Information Technology (DIT) from any Board of Technical Education (BTE) of Pakistan as equivalent to HSSC (Computer Science Group) having any one from the following subject combinations:

i- Mathematics, Statistics & Computer Science
ii- Mathematics, Economics & Computer Science
iii- Mathematics, Physics & Computer Science

SECRETARY
03/11/23

CC to:

1. Senior Director General, TEVTA, Lahore.
2. Director General, PSDA, Lahore.
3. Director to Chairperson, TEVTA, Lahore.
4. PS to COO, TEVTA, Lahore.
5. PS to Executive Director, IBCC, Islamabad.
6. PA to Chairman, PBTE, Lahore.
7. PA to Secretary, PBTE, Lahore.
8. PA to Controller of Examinations, PBTE, Lahore.
9. Assistant Secretary Registration, PBTE, Lahore.
10. Assistant Secretary Recognition, PBTE, Lahore.
11. Assistant Controller (C&V), PBTE Lahore.
12. In-Charge Operation Wing, PBTE, Lahore.
13. In-Charge Printing and Scanning section, PBTE, Lahore.
14. Web Administrator, PBTE (with a request to upload on website).
15. Notification File.

PUNJAB BOARD OF TECHNICAL EDUCATION
LAHORE



COURSE CONTENTS

FOR

POST MATRIC
DIPLOMA IN INFORMATION TECHNOLOGY
(2-YEAR)

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SCHEME OF STUDIES & EVALUATION PLAN FOR POST MATRIC DIPLOMA IN INFORMATION TECHNOLOGY (2-Year)

Part-I (First Year)

		Classes per Week		Marks		
S.N	**SUBJECT**	**Theory**	**Practical**	**Theory**	**Practical**	**Total**
1	ICT	3	3	75	25	100
2	Introduction to MS-Office	3	3	75	25	100
3	Computer Networks	3	3	75	25	100
4	Operating System	3	3	75	25	100
5	Introduction to Programming	3	3	75	25	100
6	Library Activities	-	2	-	-	-
Total		15	17	375	125	500

Part-II (First Year)

		Classes per Week		Marks		
S.N	**SUBJECT**	**Theory**	**Practical**	**Theory**	**Practical**	**Total**
1	Data Base System	3	3	75	25	100
2	Video Editing	3	3	75	25	100
3	Web Development Essential	3	3	75	25	100
4	Graphics Design	3	3	75	25	100
5	Project	0	6	0	100	100
6	Library Activities	-	2	-	-	-
Total		12	20	300	200	500

Part-III (Second Year)

S.No	SUBJECT	Classes per Week		Marks		
		Theory	Practical	Theory	Practical	Total
1	English-I	6	0	100	0	100
2	Urdu-I	6	0	100	0	100
3*	Islamiat / Religious Education	3	0	50	0	50
4**	Mutalae Quran-e-Hakeem	3	0	50	0	50
5	Elective Subjects (Any one combination of 03 Subjects from the give list.)	6+6	0	100+100	0	200
6	Library Activities	-	2	-	-	-
Total		30	2	500		500

Subject combinations for Computer Science Group

1	2	3
i. Mathematics-I ii. Economics-I iii. Computer Science ***	i. Mathematics-I ii. Statistics-I iii. Computer Science ***	i. Mathematics-I ii. Physics-I iii. Computer Science ***

* Islamyat / Islamic Education / Religious Education / Ethics (for Non-Muslims)

** Mutalae Quran-e-Hakeem / Translation of the Holy Quran / Ethics or Civics (For Non-Muslims)

***The subjects of Computer Science will be studied in First year (Part-I & Part-II)

Part-IV (Second Year)

S.No	SUBJECT	Classes per Week		Marks		
		Theory	**Practical**	**Theory**	**Practical**	**Total**
1	English-II	6	0	100	0	100
2	Urdu-II	6	0	100	0	100
3	Pak-Study	3	0	50	0	50
4*	Mutalae Quran-e-Hakeem	3	0	50	0	50
5	Elective Subjects (Any one combination of 03 Subjects from the give list.)	6+6	0	100+100	0	200
6	Library Activities	-	2	-	-	-
Total		30	2	500	0	500

Subject combinations for Computer Science Group

1	2	4
i. Mathematics-II ii. Economics-II iii. Computer Science **	i. Mathematics-II ii. Statistics-II iii. Computer Science**	i. Mathematics-II ii. Physics-II iii. Computer Science**

* Mutalae Quran-e-Hakeem / Translation of the Holy Quran / Ethics or Civics (For Non-Muslims)

****** The subjects of Computer Science will be studied in First year (Part-I & Part-II)

Introduction to Information & Communication Technologies (ICT)

(DIT Part – I)

Total Marks:	100	Theory Marks:	75	Practical Marks:	25
Total Weeks:	20				
Contact Hours per week:	06				
Total Contact Hours:	120				
Theory Hours:	40				
Practical Hours:	80				

Course Description:

This course is designed for students with little or no computer experience. This course introduces computer concepts, hardware components, basic computer operations and use of software applications to solve problems. Students will have complete understanding of the basic concepts and use of personal computers and application software.

Aims and Objectives:

After successful completion of this course, students should be able to:

- Develop a vocabulary of key terms related to computers and software programs
- Identify the components of a personal computer system
- Demonstrate mouse and keyboard functions
- Demonstrate window and menu commands and how they are used
- Demonstrate how to organize files and documents on a USB/hard drive
- Demonstrate basic maintenance of a computer
- end email messages and navigate and search through the internet.

Module	Course Contents	Allotted Weeks	Contact Hours
01	**INTRODUCTION TO COMPUTERS** 1.1 History and Evolution of Computers 1.2 Hardware Components: Input Devices, Output Devices, System Unit, Storage Devices, Communication Devices 1.3 Computer Software: System Software, Application Software, Installing and Running 1.4 Programs, Software Development 1.5 Computer Types: Personal Computers, Desktop Computers, Mobile Computing Devices, Embedded Computers, GameConsoles, Servers, Thin Clients, Mainframes, Supercomputers 1.6 Computer Applications: Education, Finance, Government, Health Care, Science, Publishing, Travel, Manufacturing	03 Weeks	18
02	**SYSTEM UNIT COMPONENTS** 2.1 The Motherboard 2.2 Processor The Control Unit, The Arithmetic Logic Unit, Machine Cycle, The System Clock, Comparison of PC Processors 2.3 Memory Bits, Bytes, Addressing, Types (RAM, ROM, Cache, Flash, CMOS) 2.4 Expansion Slots, Adapter Cards and Drive Bays 2.5 Ports and Connectors USB, VGA, HDMI, Audio, Network, FireWire 2.6 Power Supply	03 Weeks	18
03	**INPUT & OUTPUT DEVICES** 3.1 What is input? 3.2 Keyboard and Pointing devices Mouse, Joystick, Trackball, Touchpad 3.3 Touch Screen, Pen and Stylus 3.4 Other types of input Game Controllers, Digital Cameras, Voice Input, Scanners, Biometric, Terminals 3.5 What is output? 3.6 Display Devices: CRT Monitors, LCD/LED Monitors 3.7 Printers: Non-Impact/Impact, Inkjet, Laser, Multifunction, Thermal, Plotters & Large format printers 3.8 Other Output Devices: Speakers, Headphones, Multimedia Projectors, Interactive Whiteboards	02 Weeks	12

04	**DIGITAL STORAGE** 4.1. Hard Disks Characteristics of a Hard Disk, Internal/External, RAID, NAS 4.2. Flash Storage Solid State Drives, Memory Cards, USB Flash Drives, ExpressCard Modules 4.3. Optical Storage CDs, DVDs, Blue-ray Disks 4.4. Magnetic Tape Storage 4.5. Cloud Storage	02 Weeks	12
05	**SYSTEM SOFTWARE** 5.1. Operating Systems 5.2. OS Functions Starting and Shutting Down a Computer, Providing a User Interface, Managing Programs, Managing Memory, Coordinating Tasks, Configuring Devices, Establishing an Internet Connection, Monitoring Performance, Providing File Management and Other Utilities, Updating Software Automatically, Controlling a Network, Administering Security 5.3. OS Types: Stand-Alone OS, Server OS, Embedded OS; Windows, Linux 5.4. OS Utility Programs: File Manager, Search Utility, Uninstaller, Image Viewer, Disk Cleanup, Disk Defragmenter, Backup and Restore Utilities, Screen Saver, Firewall, Antivirus Programs, Spyware and Adware Removers, File Compression, Media Player, Disc Burning 5.5. Personal Computer Maintenance	03 Weeks	18
06	**APPLICATION SOFTWARE** 6.1. The need and role of Application Software 6.2. Working with Application Software 6.3. Business Software Word Processing, Spreadsheets, Databases, Presentations, Project Management, Personal Information Manager Software, Business Software for Smartphones, Accounting Software Graphics & Multimedia Software: Computer-Aided Design, Desktop Publishing, Paint/Image Editing Software, Video and Audio Editing Software, Multimedia Authoring, Web Page Authoring Software 6.4. Web Applications 6.5. Typing Assistance Software (Typing Tutor/Master etc)	03 Weeks	18

07	**THE INTERNET AND THE WORLD WIDE WEB** 7.1. Network and the Internet Connecting to the Internet Access Providers How Data Travel on the Internet Internet Addresses 7.2. The World Wide Web Browsing the Web Web Addresses Navigating Web Pages Searching on the Web Types of Web Sites Web Publishing 7.3. E-Commerce 7.4. Other Services on the Internet: E-Mail, Instant Messaging, VoIP, FTP, Video Conferencing, Social Media 7.5. Computer Security Computer Malware and Attacks Safeguards against Viruses, Worms, Trojan Horses, Malware 7.6. Information Privacy 7.7. Computer Ethics 7.8. Cybercrimes 7.9. Health Concerns of Computer Use	04 Weeks	24
	Total	**20**	**120**

Lab Requirements **(Hardware / Software)**	• A modest PC, preferably with Core i3 generation 3rd or above processor, with at least 4GB RAM and 200GB hard disk, LCD, Printer and preferably a scanner • DSL internet connection with Access Point/Modem/Switch and related cables and connectors • MS Windows 10 or above • Typing Tutor/Master or any other available typing software • Other Application Software, may be downloaded from the web
List of Practical	• Opening system box and identifying hardware components (processor, RAM, HDD, slots, ports etc) • Installing/uninstalling hardware components • Identifying, connecting, disconnecting cables and external devices like printers, monitors etc • Troubleshooting hardware issues • Windows installation and configuration • Typing Tutor/Master installation • Other Application Software installation • Familiarization with Windows icons • Windows Command Prompt and familiarization with basic DOS commands • Creating icons and shortcuts • Playing with Control Panel • Finding specifications of a computer • Formatting hard drives • Creating, copying, moving, deleting files and directories • Disk defragmentation

	• Disk backup and restore • User Management on Windows • Updating software manually and automatically • Troubleshooting software issues • Printer installation and troubleshooting • Toner replacement, Paper jam resolution • Connecting and using scanners • Playing with Windows Task Manager • Identifying file types and associating default programs for opening • Zipping and unzipping files • Disk burning • Installation of free Antivirus software and scanning files for malware • Connecting to the internet • Identifying Access Points, Modems, Switches and cables • Creating email addresses and sending/receiving emails • Connecting with and browsing LAN • Installing and using different web browsers • Browsing and searching the Web • Using Google Advanced Search • Using Video Conferencing software
Reference Material	• Shelly, G. B., & Vermaat, M. E. (2012). *Discovering computers fundamentals: your interactive guide to the digital world (Latest ed.)*. Cengage Learning

Introduction to MS Office

(DIT Part-I)

Total Marks:	100	Theory Marks:	75	Practical Marks:	25
Total Weeks:	20				
Contact Hours per week:	06				
Total Contact Hours:	120				
Theory Hours:	40				
Practical Hours:	80				

GENERAL OBJECTIVES:

After the completion of this course, students are expected to be able:

- To design documents for personal and business use by using Microsoft Office 2016.
- To prepare documents in English/Urdu language by using MS Word.
- To design spreadsheets by using Microsoft Excel 2016.
- To enhance productivity by automating several computational tasks using Excel Macros.
- To present complex data or ideas in an easy to understand form by using Microsoft PowerPoint 2016.
- To develop small scale databases using Microsoft Access 2016.

Module	Course contents	Allotted Weeks	Contact Hours
01	**INTRODUCTION TO OFFICE AUTOMATION SOFTWARE** 1.1 Introduction 1.1.1 Open Source Software 1.1.2 Proprietary Software 1.2 Introduction to Microsoft Office Suite 2016 1.3 MS Office Applications' Primary User Interface 1.3.1 Title bar 1.3.2 Quick Access Toolbar 1.3.3 Quick Access Toolbar 1.3.4 Ribbon 1.3.5 Ribbon Commands/Tabs 1.3.6 Document Page 1.3.7 Status bar	01 Week	06
02	**MICROSOFT WORD** 2.1 General Features of Word processors Editing, Formatting, Page Layout & Printing, Spelling & Grammar, Header & Footer, Picture / Table Insertion & Formatting, Screen Layouts. 2.2 BASIC EDITING Creating a New Document, Saving a Document for the First Time, Saving Document in Different File Formats, Creating a Document Using a Template, Using Print Preview, Printing a Document, Opening an Existing Document, Using Zoom, Finding and Replacing Text, Using AutoCorrect, Cutting Copying and Pasting Text. 2.3 TEXT FORMATTING Using the Font Group, Changing Fonts and Font Sizes, Applying Character Attributes, Setting Character Spacing, Using Format Painter, Applying Styles, Creating and Modifying WordArt, Using the Clear Formatting Button. 2.4 PARAGRAPH FORMATTING Formatting Paragraph, Setting Indents (First Line, Hanging, Left, Right), Setting Line Spacing, Setting Paragraph Spacing, Creating a Bulleted List, Creating a Numbered List. 2.5 PAGE FORMATTING & PRINTING The Layout Tab, Setting Margins, Selecting Page Orientation, Choosing Paper Size, Number of Columns setting, Page & Section Breaks. Selection of Printer, Print Settings. 2.6 CREATING TABLES Using the Insert Table Dialog Box, Layout Tab on the Table Tools Ribbon (Using AutoFit, Resizing a Row or Column, Merging and Splitting Table Cells). 2.7 URDU LANGUAGE SETTING AND TYPING 2.7.1 Built-in settings in Windows-10 OS 2.7.2 Using Pak-Urdu Installer in Older Windows OS	04 Weeks	24

03	**MICROSOFT EXCEL** 3.1 General Features of Spreadsheets Rows, Columns, Worksheets, Workbooks, Functions and Formulas, Editing, Formatting, Screen Layouts. 3.2 WORKING WITH EXCEL Creating a New Workbook, Opening an Existing Workbook, Entering and Editing Data in Worksheet (Entering Basic Data, Deleting and Clearing Cell Contents, Entering Dates, Cutting, Copying and Pasting Data). 3.3 FORMATTING CELLS AND WORKSHEETS Inserting and deleting cells, Merge cells, Format Cells by using Format Painter, Insert and delete columns or rows, Insert headers and footers, Rename a worksheet, Add a worksheet to an existing workbook, Change magnification by using zoom tools. 3.4 USING FORMULAS AND FUNCTIONS Understanding Formulas, Using Absolute and Mixed Cell References in Formulas, Using Cell Ranges in Formulas, Summarizing Data Using Functions (SUM, COUNT, COUNTA, COUNTBLANK, AVERAGE, MIN, MAX), Using Conditional Logic Functions (IF, AND, OR), Using Formulas to Conditionally Summarize Data (SUMIF, COUNTIF), Using Formulas to Modify Text (LEFT, RIGHT, MID, TRIM, UPPER, LOWER, CONCATENATE). 3.5 CREATING CHARTS Creating a new Chart, formatting a Chart with a Quick Style, formatting a Data Series, modifying a Chart's Legend, choosing a different chart type, Switching Between Rows and Columns in Source Data. 3.6 EXCEL MACROS 3.6.1 Definition of Macro 3.6.2 Adding the "Developer" Tab on Ribbon 3.6.3 Steps involved in Recording a simple Macro 3.6.4 Recording a Macro using Absolute References 3.6.5 Recording a Macro using Relative References. 3.6.6 Running a Macro 3.6.7 Creating a Macro for adding a list of items (such as cities, countries, fruits etc) 3.6.8 Creating a Macro for changing the Font and Font size of the whole worksheet 3.6.9 Creating a Macro for changing Date format 3.6.10 Assigning a macro to a Control Button	09 Weeks	54
04	**MICROSOFT POWERPOINT** 4.1 INTRODUCTION PowerPoint Startup Screen, User Interface Components (Title Bar, Quick Access Toolbar, Ribbon, Dialog Box Launcher, Slides Pane, Main Work Area, Status Bar), Ribbon Tabs. 4.2 PRESENTATION BASICS Creating a Presentation, Saving a Presentation, Closing a Presentation, Adding New Slides to a Presentation, Selection of Layout, Duplicating Selected Slides, Rearranging Slides in a Presentation, Deleting Slides	03 Weeks	18

	from a Presentation, Using the Print Preview for Printing Slides, Changing Print Layout. 4.3 WORKING WITH TEXT Using Text Box to Slides, Changing Font Size & Color, Using Format Painter, Creating Numbered Lists, Creating Bulleted Lists, Formatting the Text Box (Using Quick Style, Applying Fill & Border, Applying Texture & Pattern Fill), Checking Spelling. 4.4 ADDING TABLES AND CHARTS IN A PRESENTATION Inserting a Table, Inserting Excel Worksheet, Applying Table Styles, Inserting Chart, Resizing & Moving a Chart. 4.5 USING ANIMATION Applying Transition Effects, Applying Animations, Using Motion Path Animation, Modifying an Animation's Start Options and Timing, Setting Up a Slide Show, Using Presenter View, Creating interactive presentation using Zoom tool.		
05	**MICROSOFT ACCESS** 5.1 Introduction to Microsoft Access 2016 Creating a Database, Saving a Database, Opening an Existing Database. 5.2 Creating Tables Creating a Table in Datasheet view, Saving a Table, Creating a custom Table in Design View, Adding fields in a table, Data types in Access, Setting Primary Key field, Creating relationship between two tables. 5.3 Creating Forms Creating a simple Form, Creating a Form using Form Wizard, Creating a Form using Design View, Sorting data within a Form, Filtering data within a Form. 5.4 Creating Reports Creating a simple report, Creating report using Report Wizard, Creating Reports using Design View. 5.5 Creating Queries Creating a query from a table, Adding table to a query, Creating query from multiple tables, Adding criteria to a query.	03 Weeks	18
	Total	**20**	**120**

Lab Requirements (Hardware / Software)	a. Operating System: Minimum Windows 7 or 10 (32 or 64 bit) b. MS OFFICE 2016.
List of Practical	

Practical Number	Description
	MICROSOFT WORD 2016
1	Running a Microsoft Application such as Word or Excel or PowerPoint or Access identifying the main user interface components such as Title bar, Quick ac toolbar, Ribbon, Tabs, Document Page, Status bar etc.

	2	Identifying different groups available in different Tabs in MS Word 2016.
	3	Create a new document in MS Word 2016 using the File Tab and using the Quick Access Toolbar.
	4	Saving a newly created document in a new folder with a unique file name in default format.
	5	Opening an existing document, adding some contents in it and saving it in PDF format by using Save As command.
	6	Create new documents by using different Sample Templates.
	7	Open an existing multi-page document and explore the print command available in Backstage view for setting various options of Print, Printer and Settings.
	8	Open an existing document and use the Font group of Home Tab for various font settings such as changing font name, font size, superscript, subscript, font color etc.
	9	Open an existing document and use the Advanced tab of Font dialog box for changing the Character Spacing of the current document.
	10	Open an existing document and use the Format Painter button for applying font attributes of a specific text to other text. And use the clear formatting button.
	11	Create a new document, add multiple paragraphs of text and then use the Paragraph group of Home Tab for setting Left, Right, First Line and Hanging Indents.
	12	Open an existing document and then use the Paragraph group of Home Tab for setting Line Spacing and Before/After Paragraph Spacing.
	13	Create a new document, add data items on each line and then convert these data items into bulleted lists and numbered lists. Also create sub lists.
	14	Open an existing multi-page document and use the Page Setup group of Page Layout Tab for setting the page Orientation to Portrait / Landscape, and setting various page Sizes of the current document.
	15	Open an existing multi-page document and use the Page Setup group of Page Layout Tab for setting the Top, Right, Left and Bottom margins of the document.
	16	Open an existing multi-page document and add Page breaks and Section breaks in it.
	17	Open an existing document and use the Print command of the Backstage view for selecting a specific printer, specific page and number of print copies. Finally get a print.
	18	Create a new document and use the Insert Table command of the Tables group in Insert Tab for creating a 3 X 5 table. Add Column headings and Row headings, add data in cells. Resize the Rows height and Columns width.
	19	Open an existing document containing a table, and use the Merge Cells command and Split Cells command of the Merge group of Layout Tab of the Table Tools, for merging more than one cells and splitting a cell respectively.
	20	Install Urdu Language pack in windows 10 to enable Urdu typing. Install Phonetic keyboard for Urdu typing. Then create a new document and add text in Urdu language. Apply Arabic Typesetting and/or Urdu Typesetting fonts on the text.
		MICROSOFT EXCEL 2016
	21	Starting the MS Excel 2016 for the first time and understanding various options available in the opening screen such as Blank Workbook, Searching for Online Templates, Suggested Searches, Taking a Tour, Recent, Opening other Workbooks etc.
	22	Starting the MS Excel 2016 and identifying or recognizing different user interface components of the application, such as Title bar, Command Tabs, Quick Access Toolbar, File Tab, Ribbon, Name Box, Formula bar, Worksheet Tab, Different groups on different Command Tabs, Row headings, Column headings, Active Cell.
	23	Create a new Blank Workbook. Add contents in all the three worksheets available by default. Save it in default format. Open it again and Save it in PDF format also.
	24	Open an existing Workbook. Add more data in it. Clear some cells' contents. Delete some cells. Cut/Copy some cells and Paste at another worksheet.
	25	Create a new Blank Workbook and add contents in a worksheet. Insert a new cell within the data cells. Insert new column between available columns. Insert new row

			between available rows. Delete a specific cell. Delete a column/row containing data. Use Format Painter.
		26	Open an existing Workbook. Rename its worksheets. Add two new worksheets. Merge some of the adjacent cells. Add Header and Footer in a worksheet. Fill data in adjacent cells in a worksheet by using the Fill Handle.
		27	Open an existing workbook having two or more worksheets containing data. Select data in a worksheet and print the selected data by choosing "Print Selection" in the print settings. Then print the Active worksheet. Then print the whole workbook.
		28	Create a new Workbook. Add some numeric data in a column. Using the formula bar, write a simple arithmetic equation after assignment operator and observe the result. Use the "Show Formula" button in Formula Auditing group of Formulas Tab to see the formula in the cell. Use this formula to understand the order of operators in excel.
		29	Create a new workbook and add numeric contents in a worksheet. Use a Relative reference to write a formula and then copy this formula into other cells to show that the reference is adjusted automatically. Then use an absolute reference. Then use a mixed reference to understand the difference.
		30	Open an existing workbook containing numeric data. Use an absolute reference to write a formula and then copy it to other cells to check that the reference is not changed. Then use a mixed reference to understand the difference.
		31	Open an existing workbook containing numeric and alphanumeric data. Use SUM(), COUNT(), COUNTA() and COUNTBLANK() functions for summarizing data.
		32	Open an existing workbook containing numeric data. Use AVERAGE(), MIN(), MAX() functions for summarizing data.
		33	Create a new workbook. Enter Name, Age in years, City Name and Cell Number of 10 students in a worksheet. Now use the AND function to choose only those students who belong to a specific city and having a specific age in years.
		34	Create a new workbook. Enter 10 students obtained marks in their 5 different subjects. Calculate the Total Obtained Marks column using the SUM function. By using a specific value for Total Marks, find the percentages of each student. Now use the IF function to assign grades to each student.
		35	Create a new workbook. Enter 10 records such that first column contains the names of Items purchased (e.g. Book, Apple, Sugar etc.), second column contains the Category of each item (e.g. Stationery, Fruit, Grocery etc.), third column contains the Price of each item. Now use the SUMIF function to calculate the total price of stationery items purchased.
		36	Open the same workbook used in practical No-35 above and add some more records in it. Then use the COUNTIF function to calculate the total number of grocery items purchased.
		37	Create a new workbook. Add 10 random string(text) values in column A. Then use the LEFT, RIGHT, MID, TRIM, UPPER, LOWER, CONCATENATE functions to modify the text values.
		38	Create a new workbook. Add data such that first column contains the students' class numbers and second column contains their test marks. Then Create a simple Line chart for this data set. Add proper titles for both axes. Modify Chart Title. Edit data series. Add/Remove chart Legend.
		39	Open the same workbook used in practical No-38 above and add third column for Test2 marks. Then create a simple line chart for comparing the marks of two tests. Then change the chart style.
		40	Open an existing workbook. Developer Tab is hidden by default. First show the Developer Tab to be able to use Macros and VBA tools. Go to File Tab, Click on "OPTIONS", Select "Customize Ribbon", then under the Main Tabs select the "Developer" check box and click ok.
		41	Steps involved in recording a macro: 1. Click on "Developer" Tab. 2. Decide whether to record the macro with Absolute References or Relative References (Absolute References is selected by default. If you want to use Relative References then click the button "Use Relative References" just

		below the Record Macro button). 3. Click the "Record Macro" button. 4. A dialog box appears; Write a meaningful name for this macro. 5. Select a key for short cut, shift+ key can also be selected. 6. Decide where the macro should be stored and add optional description of this macro. 7. Click "OK". 8. The "Stop Recording" button appears. 9. Perform all the steps that you want to be recorded. 10. Click "Stop Recording" button.
	42	Running a Macro: A recorded macro can be executed in two ways. 1. Click on "Developer" Tab, Click on "Macros" Button, A dialog box appears showing a list of all macros, Select your desired macro, Click "Run" button. 2. Use the short cut key that was selected before recording the macro.
	43	Macro for adding a list of items: 1. Click on "Developer" Tab and then click on "Use Relative References". 2. Start recording a macro. 3. Write 'macList' in the macro name box. 4. Press "SHIFT+L" in the short cut key for this macro. 5. Click "Ok". 6. Now type some names of cities or fruits etc. in each cell. 7. Click "Stop Recording" Button. 8. Open a new worksheet and click on "Macros" button in the "Developer" Tab, select the "macList" macro from the list of macros and click "Run" button. The list of cities or fruits will be printed here automatically. 9. Now open a new worksheet and press the short cut key "CTRL+SHIFT+L". The list is printed again.
	44	Macro for designing a blank Detailed Marks Certificate: 1. Open a new workbook, click on "Developer" Tab, click on "Use Relative References" button, click on "Record Macro" button. 2. Write 'macDMC' in name box and write "D" in the short cut key for this macro, click "Ok" button. 3. Now click in cell A1. Select range A1:D1, click "Merge and Center" button on Home Tab. 4. Write "Detail Marks Certificate", choose a specific Font color, Font size and Font name. 5. Write down student details such as Name, Roll No, Subjects, Subjects' marks etc. in different cells. 6. Write SUM function in a cell for calculating total marks. 7. Write a formula in a cell for calculating the percentage. 8. Format the contents' area by applying borders, colors, fonts, text alignments, column widths and row heights, fill color etc. 9. Click on "Stop Recording" button. 10. Now open a new worksheet and use the short cut key "CTRL+D" to print the whole designed format automatically. 11. It is a blank DMC. As you type data in its cells, it will automatically show the total marks and percentage in the appropriate cells.
	45	Assigning a macro to a control: 1.Open the same workbook created in practical No-44 above. 2. Open a new worksheet. 3. Click the "Insert" Tab, then click "Illustrations", then click "Shapes", then select "Round Corner" rectangle. 4. Draw a button in the blank worksheet. 5. Right Click on this button and select "Assign Macro" command from the menu. 6. Select the "macDMC" macro from the list of macros and click "Ok". 7. Now click this button to add the DMC. Note that the "macDMC" macro can also be added in the Quick Access Toolbar.
	MICROSOFT POWERPOINT 2016	
	46	Create a new presentation in MS PowerPoint 2016 using the File Tab and using the Quick Access Toolbar. Add new slides in it. Add contents in the text boxes. And finally save the presentation in default format. Close the presentation file.
	47	Create a new presentation, select "Title Slide" layout for title slide and "Content and Title" layout for other slides. Add contents in slides. Insert new slides in between slides. Duplicate a slide. Rearrange some slides. Delete some slides.
	48	Open an existing presentation file containing multiple slides. Use print command of Backstage view for selecting different Print Layouts. Then select "2 slides" Handout and Print the slides.
	49	Create a new presentation by selecting the "Training" sample template. Add contents in slides. Format some text boxes using Quick Style, some using Applying Fill and Border, some applying Texture and Pattern Fill. Insert a table in a new slide and apply

		Table Style on it. Insert a chart based on this table.
	50	Open an existing presentation file. Apply different Transition effects on different slide such as Fade, Wipe, Split etc. Then apply different animations on text boxes in a slide such as Zoom, Swivel, Fly In etc. Setup Slide Show for this presentation.
	MICROSOFT ACCESS 2016	
	51	Start MS Access 2016. Create a new Database by selecting "Students" from Sample Templates using the Backstage view (File Tab). Explore different Objects, such as Tables Forms Reports Queries, of the database using Object Navigation Pane. Then Save and Close the database.
	52	Create a new Blank Database. Add Data items in the Table opened by default. Add 10 rows or records. Change Table View to Design View. Change the field names from Field1, Field2 etc. to Meaningful attributes. Change the data types of each field to appropriate data types. Change data type of ID field from AutoNumber to Number. Save the table.
	53	Open an existing Database and add more tables in it. Create primary keys in all tables. Add foreign key attributes in related tables. Then create relationships among related tables. Apply referential integrity rules on related tables. Save the database.
	54	Open an existing database. Create a simple form for an existing table. Create another form for another table by using Form Wizard. Sort data within forms. Filter data within forms.
	55	Open an existing database. Create a new form by using the "Form Design" button in the Forms group of the Create Tab. Add Existing Fields from Tools group in the Design Tab of Form Design Tools. Adjust the Heights and Widths of the Labels and text fields in the form design grid. Change the text format of Labels and Text fields. Change the view to Form View and navigate the form data. Save the database.
	56	Open an existing database. Create a new Simple Query by using the Query Wizard button on the Queries group of Create Tab. Add more data in the source table and then run the query again.
	57	Open an existing database. Run an existing Query. Change query view to Design View. Add Criteria for extracting specific records from the source table. Apply "AND" and/or "OR" criteria. Save the query and database.
	58	Open an existing database. Create a query based on multiple related tables.
	59	Open an existing database. Create a Simple Report through "Report" Button on the Reports group of Create Tab. Change the report view to "Print Preview". Make changes to report layout in Layout View.
	60	Open an existing database. Create a new report in Design View.
Reference Material	1. Book: Excel Macros for Dummies By "Michael Alexander" 2. YouTube Channel " LearnIt Training" for MS OFFICE Applications. 3. Microsoft Official Academic Course (MOAC) which covers the following Microsoft Office Specialist (MOS) Exams: 3.2.MOS Exam 77- 725: WORD 2016 3.3.MOS Exam 77- 727: EXCEL 2016 3.4.MOS Exam 77- 729: POWERPOINT 2016 3.5.MOS Exam 77- 730: ACCESS 2016	

Computer Networks

(DIT Part-I)

Total Marks:	100	Theory Marks:	75	Practical Marks:	25
Total Weeks:	20				
Contact Hours Per Week:	06				
Total Contact Hours:	120				
Theory Hours:	40				
Practical Hours:	80				

General OBJECTIVES:

After completing this course, students will be able to:

- Understanding the basic concept of computer networks.
- Understanding the different types of Cables used for Computer Networks.
- Configuring different network devices.
- Creating different network scenarios in a network simulator (packet tracer)

Module	Course Contents	Allotted Weeks	Contact Hours
01	**BASIC TERMINOLOGIES** 1.1. Components of a Communication Model 1.1.1. Definition 1.1.2. Host / Sender 1.1.3. Media 1.1.4. Message 1.1.5. Protocol 1.1.6. Destination / Receiver 1.2. Computer Networks 1.2.1. Basic Definition & Types 1.2.2. Geographical Area Wise (Physical) (LAN, MAN, WAN, Internet) 1.3. Virtual (Logical) 1.3.1. VLANS 1.3.2. VPNS 1.4. Function / Working	02 Weeks	12
02	**TOPOLOGY** 2.1. Definition 2.2. Types of Topologies 2.2.1. Wired (BUS, Star, Ring, Hybrid, Mesh) 2.2.2. Wireless (Wi-Fi, Satellite, Radio Wave)	02 Weeks	12
03	**NETWORKING DAVIES** 3.1. Node 3.2. NIC 3.3. Modem 3.4. Hub 3.5. Switch 3.6. Wireless Devices 3.6.1. Access Point 3.6.2. Wireless Modem 3.6.3. Wireless USB Antenna 3.7. WAN / Internet 3.7.1. Router 3.7.2. Switch	02 Weeks	12
04	**TRANSMISSION MEDIA** 4.1. Wired media (Guided Media) 4.1.1. Coaxial cable (10 Base2 10 Base 5 10Base T, 100Base X) 4.1.2. BNC Connector 4.1.3. Twisted pair cable 4.1.4. Unshielded twisted- pair i. Cat 2, Cat 3 (Voice Communication) ii. Cat 4, Cat 5, Cat 6 (Data Transmission) iii. RJ-45 Connector 4.1.5. Shielded twisted- pair 4.1.6. Fiber optic cable i. Single Mode ii. Multi-Mode	03 Weeks	18

	4.2. Wireless media 4.2.1. Why we use Wireless Media 4.2.2. Technologies i. Satellite ii. Wi-Fi iii. Bluetooth iv. Microwave v. Radio Wave 4.3. Wireless communication with LANs 4.3.1. Introduction 4.3.2. Wireless Switches / Hub 4.3.3. Wireless NIC		
05	**HOW NETWORK TRANSFER DATA (NETWORK MODELS)?** 5.1. OSI Model 5.1.1. Application Layer 5.1.2. Presentation Layer 5.1.3. Session Layer 5.1.4. Transport Layer 5.1.5. Network Layer 5.1.6. Data Link Layer 5.1.7. Physical Layer 5.2. TCP/IP Model 5.2.1. Application Layer 5.2.2. Transport Layer 5.2.3. Network Layer 5.2.4. Physical or Link-Layer	03 Weeks	18
06	**IP ADDRESSES** 6.1. What is IP address? 6.1.1. Why we use IP Address 6.2. IPV4 6.2.1. Class A, Class B, Class C, Class D, and Class E, IP addresses 6.3. Introduction to IPv6 6.3.1. Why IP V6 introduced? 6.3.2. IP V6 address length (i.e. 128 bits)	02 Weeks	12
07	**PROTOCOLS** 7.1. Definition 7.2. Types 7.3. Routed protocols 7.3.1. Definition 7.4. Routing Protocols 7.4.1. Definition 7.5. Common Protocols 7.5.1. TCP / IIP 7.5.2. UDP 7.5.3. FTP 7.5.4. HTTPs	02 Weeks	12
08	**PRACTICAL PORTION**	04	24

	8.1. Installing and Configuring Modem 8.2. DSL Configuration 8.3. Creating Straight Through cable 8.3.1. Practically demonstrate the connection of computer and hub / switch 8.4. Creating Cross Over Cable 8.4.1. Practically demonstrate the connection of two computers without hub / switch 8.5. Basic Commands for Troubleshooting 8.5.1. Ping, ipconfig / all, ipconfig / renew, ipconfig / release, trace route, 8.6. Packet Tracer (Simulation) 8.6.1. Installing network simulator 8.6.2. Practically Demonstrate 02-Computers Network 8.6.3. Configuring PC's with IP addresses subnet mask and gateway 8.6.4. Create two different topologies of 10-10 computers using Hub 8.6.5. Place Switch between hubs to connect both technologies 8.6.6. Configuring switches by giving name to switches and managementIP addresses 8.6.7. Connection PCs to switch and then ping each other` that they areworking properly.	Weeks	
	Total	**20**	**120**

Lab Requirements **(Hardware / Software)**	**Recommended:** • Minimum 10 number of Core i3 Computers with 4GB RAM & 250 GB HD or Higher • Wire or Wireless HUB • Minimum 05 number of Crimping Tools • 01 RJ-45 Connector / Per Student • UTP Cable Cat-05 or Higher • Cable Tester • Windows 07 minimum • Cisco Packet Tracer **Additional Resources** • Windows 10 • Switch • Router • DSL Modem • 04 RJ-45 Connectors / Per Student
List of Practical	1. Identify hardware for networking i.e. • NIC • RJ-45 & RJ-11 Connectors • UTP Cable Cat-5 or higher • Crimping Tool • Cable Tester 2. Making Straight Cable 3. Connect the computers in LAN using hub 4. Making Cross-Over Cable 5. Connecting two computers using cross-over cable 6. Connecting two hubs or switches using cross-over cable 7. Use different network commands

	• Ping • Ipconfig • ipconfig / all • Arp –a • Hostname • Tracert 8. Installation of Packet Tracer 9. Creating LAN of two computers, gradually increase the number of computers 10. Creating Wireless LAN(WLAN) 11. Demonstrate the Ping Command 12. Installation, configuration of switch 13. Creating LAN using switch 14. Demonstrate the Router by connecting two different types of networks using Packet Tracer
Reference Material	• Networking Essential by Andrew Tanenbaum • Packet Tracer by Cisco (https://www.packettracernetwork.com/tutorials/)

Operating Systems

(DIT Part-I)

Total Marks:	100	Theory Marks: 75	Practical Marks: 25
Total Weeks:	20		
Contact Hours Per Week:	06		
Total Contact Hours:	120		
Theory Hours:	40		
Practical Hours:	80		

General Objectives:

After completion of this course, a student should be able to:

- Understand the basic concept of an operating system
- Understand different types of operating systems
- Install & configure windows 10
- Install & configure different peripheral devices

Module	Course Contents	Allotted Weeks	Contact Hours
Theory Portion (Part-A)			
01	**OVERVIEW OF AN OPERATING SYSTEM** 1.1. What is Operating System? 1.2. Types of OS 1.2.1. Desktop OS i. Batch OS (Batch Processing) ii. Multiprogramming Operating System iii. Multiprocessing Operating System iv. Multitasking Operating System v. Network Operating System vi. Real Time Operating System vii. Time Sharing Operating System viii. Distributed Operating System 1.2.2. Mobile / Tablet OS i. Android a. What is android system b. Version & Upgrades ii. IOS	02 Weeks	12
02	**FUNCTIONS OF AN OPERATING SYSTEM** 2.1. Operating System Structures 2.1.1. User Interface 2.2. Functions 2.2.1. Memory Management 2.2.2. Process Management 2.2.3. Resources Management 2.2.4. File Management 2.2.5. Security 2.2.6. Deadlock Prevention 2.2.7. Coordination Between users and software's	02 Weeks	12
03	**PROCESSES** 3.1. Definition 3.2. Process States (05 States) 3.3. Process structure 3.3.1. PCB and components 3.4. Operations on Processes 3.5. Threads	02 Weeks	12
Practical portion (Part-B)			
04	**INTRODUCTION TO WINDOWS 10** 4.1. Installation Requirements 4.2. How to create Bootable USB / DVD / CD 4.2.1. Rufus Software 4.3. Step-By Step Installation Process 4.4. Hard Disk Partition 4.5. GUI Basics / Desktop Basic 4.6. Start Menu	07 Weeks	42

	4.7. Task Bar 4.8. Settings 4.9. Driver / Hardware Installation 4.9.1. VGA / SVGA / AGP / Gaming Card 4.9.2. Sound Card 4.9.3. Network Interface Card i. Wired ii. Wireless 4.10. Software Installation 4.11. User Creation 4.11.1. Setting Properties 4.11.2. Assigning Role & Permissions 4.12. Tablet Mode 4.13. Dual Desktop 4.14. Network Settings 4.14.1. Join Workgroup 4.14.2. Connecting with DSL MODEM 4.14.3. Connecting with Hotspot 4.15. Updates & Security 4.16. Mouse & Keyboard Settings 4.17. Adding Urdu Keyboards 4.18. Installing & Configuring Printers & Scanner		
05	**NETWORK CONNECTIVITY (NETWORKING)** 5.1. Creating Workgroup 5.2. Assigning IP Address to NIC / HOST / Computer 5.3. File Sharing 5.4. Printer Sharing 5.5. Assigning Permissions to users 5.6. Practically demonstrate the data sharing between computers	03 Weeks	18
06	**WINDOWS SERVER 2019 / 2016** 6.1. Definition 6.2. Difference between client and Server 6.3. Role & Services 6.3.1. Print & Document Services 6.3.2. Active Directory 6.3.3. DHCP 6.3.4. DNS 6.3.5. WINS	04 Weeks	24
	Total	20	120

Lab Requirements **(Hardware / Software)**	Windows 10 Device Drivers Core i3 4GB RAM 250 GB HD or Higher Printer Scanner DSL Modem Additional: Webcam Joystick Barcode Reader HDMI Cable
List of Practical	1. Identify the basic components of computer i.e. CPU-MOUSE-

	KEYBOARD-MONITOR 2. Introduction to BIOS a. Setting System Date & Time b. Setting Boot-Devices Priority i. HD ii. USB Drive / Hard Disk iii. Network 3. Create bootable USB / DVD / CD 4. Windows 10 Installation 5. HD Partition during Installation 6. Setting username & computer name during installation 7. Changing Taskbar & Desktop settings 8. Device Drivers Installation a. Via Settings b. Without settings (Direct installation) 9. Un-installing a software via settings 10. Converting windows from computer to tablet mode 11. Creating & using dual desktops 12. How to join a workgroup? 13. Configure & connect DSL Modem 14. Using Internet via Hotspot 15. How to add Urdu Keyboard & fonts 16. Printer Installation 17. Printer sharing on LAN 18. Scanner Installation 19. Demonstrate the scanning document process 20. Assign IP address to your computer 21. Share your files & folder 22. Assign Permissions 23. Password Recovery 24. Backup & Restore 25. Defender Additional a. Windows Server 2019/2016 Installation b. Install & Configure Active Directory c. Install & Configure DNS d. Install & Configure DHCP
Reference Material	1. Operating Systems by William stalling 2. Windows 10 simplified Book (Paul McFedries) 3. Operating System & Networks by Tariq Mahmood & Imran Saeed (IT Series)

Introduction to Programming

(DIT Part-I)

Total Marks:	100	Theory Marks:	75	Practical Marks:	25
Total Weeks:	20				
Contact Hours per week:	06				
Total Contact Hours:	120				
Theory Hours:	40				
Practical Hours:	80				

GENERAL OBJECTIVES:

After completion of this course, students will be able to write a python script that uses:

- Variables to store different data type values.
- Arithmetic Operators to perform calculations.
- Conditional Statement (If, else, elif), Execute a block of code based on certain condition. What to run and what to skip.
- Loops (for and While) to execute a block of code again and again based on certain conditions.
- Type Casting to convert the variable as per requirements i.e., from number to string or string to number.
- Strings, to store characters, and work with it by using different built-in functions.
- Lists that organize different data types together as a container.
- Functions
- Turtle library to create basic shapes such as Square, Rectangle, Triangle and Stars.

Module	Course Contents	Allotted Weeks	Contact Hours
Python Programming Language			
01	**Introduction to Programming** 1.1. What is a program? 1.2. Languages of Programming a computer 1.2.1. Machine Language 1.2.2. Assembly Language 1.2.3. High Level Language 1.3. Algorithm 1.4. Compiler vs Interpreter 1.5. Introduction and Benefits of Python 1.6. History of Python 1.7. Exercise	02 Weeks	12
02	**GETTING STARTED WITH PYTHON** 2.1. Downloading and Installation of Python IDE (PyCharm) 2.2. Anatomy of Python Program 2.3. Write your first Hello World! Script 2.4. Guidelines for creating Script 2.4.1. Importance of comments 2.4.2. Spacing 2.5. Programming Errors: 2.5.1. Syntax Error 2.5.2. Runtime Errors 2.5.3. Logical Errors 2.6. Exercise	02 Weeks	12
03	**VARIABLES & OPERATORS** 3.1. Variables in Python 3.2. Rules and Guidelines for creating a variable 3.3. Assignment Operator 3.4. Multiple Assignments 3.5. Use of Buit-in function (type) 3.6. Arithmetic Operators (+, -, /, *, **) 3.7. Type Conversion Vs Type Casting 3.8. Boolean Operator 3.9. Logical & Comparison Operators 3.10. Exercise	02 Weeks	12
04	**STRINGS** 4.1. Understanding Strings 4.2. Combine vs Repeat Strings 4.3. String's Buit in Methods (capitalize (), len (), lower (), upper (), strip (), replace (), startwith(), endswith()) 4.4. Exercise	02 Weeks	12
05	**LISTS** 5.1. Understanding Lists 5.2. Forward vs Backward Accessing 5.3. Changing, Removing and Adding Element 5.4. Slice a List 5.5. Membership Operator: in vs not in	02 Weeks	12

	5.6. Exercise		
06	**CONDITIONAL STATEMENT:** 6.1. if statement 6.2. else statement 6.3. elif statement 6.4. Exercise	02 Weeks	12
07	**LOOPS:** 7.1. for loop 7.2. while loop 7.3. continue vs break 7.4. Exercise	02 Weeks	12
08	**FUNCTIONS** 8.1. Understanding functions 8.2. print vs return statement 8.3. Variable scope 8.4. Default arguments 8.5. Exercise	02 Weeks	12
09	**WORKING WITH GRAPHICS** 9.1. Introduction to Turtle 9.2. Basic commands (forward(), back(), left(), right()) 9.3. Draw Shapes (Lines, Square, Rectangle, Circle, Star) 9.4. Working with Excel File using Panda 9.4.1. Reading an Excel file using Python 9.4.2. Writing into an excel file using Python 9.5. Other Useful Python Libraries 9.5.1. Numpy 9.5.2. Matplotlib 9.5.3. Tkinter 9.5.4. Django 9.5.5. Kotlin 9.5.6. Micropython 9.5.7. PyGame **Practical (25,26,27,28,29,30,31)**	04 Weeks	24
	Total	20	120

Lab Requirements **(Hardware / Software)**	**1. Hardware Requirements:** • CPU: Intel Core or Xeon 3GHz (or Dual Core 2GHz) or equal AMD CPU • RAM: 4 GB (6 GB recommended) • Display Resolution: 1280×1024 is recommended, 1024×768 is minimum. **2. Software Requirement:** • 64-bit versions of Microsoft Windows 11, 10, 8 • Install PyCharm Community
List of Practical	1. Write a script to display "Hello World!! "On console.

2. The electricity bills for the last three months have been 23000, 32000 and 64000. What is the average monthly electricity bill over the three-month period? Write an expression to calculate the mean, and use print() to view the result.

3. Write a script to calculate the area of circle. (Area of Circle: $A = \pi r^2$).

4. Write a script that Count all letters, digits, and special symbols from a given string. **inputString** = "P@#yn26at^&i5ve"

5. Write a script to find all occurrences of "Baqir" in a given string ignoring the case.

   inputString = "Baqir is student of python programming class. Baqir belongs to district peshawar"

6. Write a script to split a given string on hyphens and display each substring.

   inputString = Bareera-is-a-data-scientist

7. Write a script to check whether a number entered by user is even or odd.
8. Write a script to check whether a number is divisible by 7 or not.
9. Write a script to takes score from a user between (1 and 100) and display its grade according to score. (Score: 1-50 Grade: Average) (Score: 51-70 Grade: Good) (Score: 71-100 Grade: Excellent).
10. Write a script to print First 10 natural numbers using loop (while, for).
11. Write a script to print factorial of the given number (while, for).
12. Write a script to calculate the sum of all numbers from 1 to a given number (while, for).
13. Write a program to print multiplication table of a given number (while, for)
14. Write a script to print the list the reverse order.
15. Write a script that takes five fruits name from the user and store it in a list. Display the list elements using for loop.
16. Write a script to turn every item of a list into its square.

    (numberList= [2,4,6,6,10])

17. Write a script that copy all the elements of the given list and append it to new list name updatedList.

    list = ['Mango', 'Apple','Banana,'Melon','Grapes']

18. You have been given a Python list. Write a script to find value 20 in the list, and if it is present, replace it with 200. **list** = [22,12,25,667,988,387,20,188,77]

	19. Write a script that takes an input string from a user and find that if the string exists or not in the given list. **list** = [‘Pakistan’, ‘Shayan’, ‘Baqir’, ‘GCMS’] 20. Write a script that find all the elements in a list start with letter B. Names = [“Ali”, “Shayan”,”Baqir”,”Bareera”,”Zulfiqar”] 21. Write a Python function that accepts two numbers as arguments and returns the sum. 22. Write a Python function that accepts different values as parameters and returns a list. 23. Write a Python function that returns multiple values. 24. Write a Python function to find the factorial of a number. 25. Write a python script to draw star on screen. 26. Write a python script to display rectangle on screen 27. Write a python script to draw square on screen. 28. Write a python script to draw a circle on screen. 29. Write a python script to draw lines on screen.
Reference Material	• Introduction to Programming using Python by Y. Daniel Liang • Python For Dummies by Stef Maruch &Aahz Maruch • https://docs.python.org/3/tutorial/index.html

DATABASE SYSTEMS

(DIT Part-II)

Total Marks:	100	Theory Marks:	75	Practical Marks:	25
Total Weeks:	20				
Contact Hours per week:	06				
Total Contact Hours:	120				
Theory Hours:	40				
Practical Hours:	80				

GENERAL OBJECTIVES:

After completion of this course, students are expected to be able:

- To ascertain the importance of databases in knowledge-based societies.
- To understand the basic concepts of Database and Database Management Systems.
- To transform an Entity Relationship Model into a Relational Schema.
- To use an Open Source software.
- To apply SQL commands for data manipulation in a database.
- To use MySQL Community Server 8.0 for Creating and Maintaining adatabase.
- To Create Front-end in MS ACCESS for MySQL Databases

Module	Course Contents	Allotted Weeks	Contact Hours
01	**INTRODUCTION TO DATABASE CONCEPTS** 1.1 Definition of Database 1.2 Importance/Advantages of Databases 1.3 Database Models 1.3.1 Hierarchical 1.3.2 Network 1.3.3 Relational 1.4 Definition of Database Management System (DBMS) 1.4.1 Relational DBMS (SQL Based) (MS Access, MS SQL, MySQL, ORACLE) 1.4.2 Non-Relational DBMS (NoSQL) (MongoDB, HBase, Cassandra) 1.5 Functions of DBMS 1.5.1 Data Dictionary Management 1.5.2 Data Storage Management 1.5.3 Data Integrity Management 1.5.4 Backup & Recovery Management 1.5.5 Security Management 1.5.6 Multi-User Access Control	01 Week	06
02	**RELATIONAL DATABASE CONCEPTS** 2.1 Definition of Relational Database & RDBMS 2.2 Entity, Table, Record, Field 2.3 Primary Key, Composite Key, Foreign Key 2.4 Referential Integrity 2.5 Types of Relationships 2.5.1 One-to-One 2.5.2 One-to-Many 2.5.3 Many-to-Many	01 Week	06
03	**DATA MODELLING** 3.1 Introduction to Data Modelling & its importance 3.2 Definition of Entity Relationship Diagram (ERD) 3.3 Elements of ERD 3.4 Transforming ERD to Relational Schema 3.5 Normalization of Relational Database 3.5.1 First Normal Form (1NF) 3.5.2 Second Normal Form (2NF) 3.5.3 Third Normal Form (3NF)	03 Weeks	18
04	**DATABASE DEVELOPMENT USING MYSQL** 4.1 Introduction to MYSQL 4.1.1 Definition and advantages of MySQL 4.1.2 Installation of MySQL Community Server 8.0 4.1.3 Introduction to MySQL Workbench 8.0 4.1.4 Introduction to MySQL Shell 8.0 4.1.5 Introduction to MySQL 8.0 Command Line Client 4.2 Introduction to Structured Query Language (SQL) 4.2.1 Data Definition Language (DDL) 4.2.2 Data Manipulation Language (DML) 4.2.3 Data Control Language	15 Weeks	90

4.3 MySQL Statements for Database Development

4.3.1 Database Manipulation

i. CREATE DATABASE statement
ii. DROP DATABASE statement
iii. USE Statement

4.3.2 Basic Data Types

i. VARCHAR
ii. TEXT
iii. LONGTEXT
iv. INT
v. BIGINT
vi. FLOAT
vii. DOUBLE
viii. BOOL
ix. DATE
x. TIME
xi. YEAR

4.3.3 Table Manipulation

i. SHOW TABLE Statement
ii. CREATE TABLE statement
iii. DROP TABLE statement
iv. TRUNCATE TABLE statement
v. ALTER TABLE statement
vi. ALTER TABLE – ADD
vii. ALTER TABLE – DROP COLUMN
viii. ALTER TABLE – MODIFY COLUMN
ix. CREATE INDEX statement
x. INSERT INTO statement
xi. UPDATE statement
xii. DELETE statement
xiii. LIMIT clause
xiv. INSERT INTO SELECT statement
xv. DESC and EXPLAIN statements

4.3.4 Data Retrieval

i. SELECT statement
ii. SELECT DISTINCT statement
iii. WHERE clause
iv. Operators used in WHERE clause
v. Wildcards (% , _) used in WHERE clause
vi. AND, OR, NOT Operators
vii. ORDER BY clause
viii. ORDER BY DESC
ix. GROUP BY statement
x. HAVING clause

4.3.5 Constraints

i. NOT NULL
ii. UNIQUE
iii. PRIMARY KEY
iv. FOREIGN KEY
v. DEFAULT
vi. CHECK

4.3.6 Functions

i. AVG()

	ii. COUNT() iii. CONCAT() iv. LOWER() v. LENGTH() vi. LTRIM() vii. MIN() viii. MAX() ix. RTRIM() x. REPLACE() xi. REPEAT() xii. STRCMP() xiii. SUBSTR() xiv. SUM() xv. UPPER() 4.3.7 MySQL Operators i. Arithmetic Operators ii. Comparison Operators iii. Logical Operators 4.3.8 Views i. CREATE VIEW statement ii. DROP VIEW statement 4.3.9 MySQL Joins i. INNER JOIN ii. LEFT JOIN iii. RIGHT JOIN iv. CROSS JOIN 4.3.10 Front-end-Development i. Connection MS Access to MySQL Database. ii. Creating Forms for MySQL Databases iii. Creating Reports for MySQL Databases		
	TOTAL	**20**	**120**

Lab Requirements (Software)	**Software Requirements:** • Minimum Windows 7 (64-bit, Professional level or higher) • Mac OS X 10.6.1+ • Ubuntu 9.10 (64bit) • Ubuntu 8.04 (32bit/64bit)
List of Practical	

Practical Number	Description
1	Downloading and Installation of MySQL Server 8.0: 1. Download MySQL Community Server from dev.mysql.com/downloads/mysql/ 2. Install MySQL Server 8.0, MySQL Workbench 8.0 and MySQL Shell 8.0 as follow: (a) Run the downloaded mysql-installer-community-8.0 file. (b) Choose the Custom setup type, click Next. (c) Select 'MySQL Server 8.0' from Servers, 'MySQL Workbench 8.0' and 'MySQL Shell 8.0' from Applications, 'Samples and Examples' from Documentation. Click arrow key to bring these products in the list of "Products to be Installed". Click Next then Click Execute then Next. (d) Leave default settings on

		Type and Networking, click next. Keep "Use strong password….." and click next. Create a MySQL Root Password and click next. Leave default settings on "Windows Service" and click next. Keep default settings and click next. Click Execute. Click Finish. (e) Enter password and click check. Then Next and then Execute. Finally click Finish, Next and Finish. (f) The MySQL Workbench 8.0 and MySQL Shell tool will be started. To verify the successful installation of MySQL Server, run the windows command prompt and execute this command "mysql --version". It will show the version and full name. Don't forget to add the path in environment variable.
	2	Starting MySQL Server and Establishing the Session/Connection: 1. The MySQL Server will automatically start by starting windows because it was selected by default during the installation of MySQL Server. 2. If MySQL Server is not started automatically, then (a) Write 'Services' in the search box on Taskbar and press Enter key. (b) Services dialog box appears. Search for the 'MySQL80' service in the list of services. (c) In the 'MySQL80' properties, while 'General' tab is opened, select the Startup Type as Automatic. (d) If the Service status is Stopped, click on Start. 3. Connect to MySQL Server by following these steps: (a) Start windows command prompt. (b) Write 'mysqlsh' command and press Enter key. MySQL JS prompt will appear. (c) Write '\sql' command and press enter key to change command prompt to SQL mode. (d) Write '\connect root@localhost' command and press enter key. Then enter the password. Choose whether to save password or not. (e) If your MySQL Connection Id is shown, then Server is started and connection is established successfully. (f) Now here all SQL commands can be used to play with MySQL databases.
	3	MySQL Workbench User Interface: 1. Start MySQL Workbench 8.0. Title bar shows the application name "MySQL Workbench". Below the title bar is Tab bar which shows Home Tab. Below the Home Tab is Menu bar. 2. On the main window, Click on "Local instance MySQL80 root localhost:3306". 3. Enter the root Password. A new Tab will open containing "Query1 window", Navigator Pane, Information Pane, Output pane etc. This Tab is named as "Local instance MySQL80". You can click the home Tab icon (on the left) to go to the Home Screen. 4. The toolbar available under the menu bar contains controls for creating a new database (Schema), new table, new view, SQL tab etc. 5. In the Navigator Pane, two Tabs are available; Administration and Schemas. Administration Tab provides features for managing the server, clients etc. Schemas Tab allows to manage Databases. 6. Click on Schemas Tab to show available databases.
	4	Using MySQL Shell tool for exploring available databases: 1. Connect to MySQL Server as explained in step-3 of practical No-2 above. 2. Write command "show databases;" and press enter. Available databases are shown.

		3. Write command "use world;" and press enter. Default database will be set to World. (Note the prompt which contains database name) 4. Write "show tables;" and press enter. All tables of 'world' database will be shown. 5. Write "select * from city" and press enter. All records of 'city' table will be shown. 6. CTRL + L is used to clear screen. CTRL + C is used to interrupt execution.
	5	Creating and Deleting a MySQL Database: 1. Connect to MySQL Server as explained in step-3 of practical No-2 above. 2. Write 'create database college;' command and press enter. 3. Write 'create database shop;' command and press enter. 4. Write 'show databases;' command and press enter. The list contains both DBs. 5. Now write 'drop database shop;' command and press enter to delete SHOP Db.
	6	Creating table in a MySQL database: 1. Connect to MySQL Server as explained in step-3 of practical No-2 above. 2. Write 'use college;' command and press enter to set default schema to College. 3. Execute 'show tables;' command to list all tables in College database. It is currently empty because it was only created in practical No-5 above. 4. Execute 'create table Student (id int, name text(15), age int);' command to create a new table called Student. 5. Insert 5 records in Student table using 'INSERT INTO' statement. 6. Extract all data from Student table using SELECT statement.
	7	Adding more attributes in existing table: 1. Start using the 'College' database (created above) in MySQL Shell. 2. Use the ALTER TABLE - ADD statement to add two more columns (City and Phone No) in Student table. 3. Use UPDATE statement to populate these two new columns with data. 4. Extract all records using SELECT statement.
	8	Deleting a Column of a Table and Changing data type of a Column: 1. Start using the 'College' database (created above) in MySQL Shell. 2. Show all data of Student table by using SELECT statement. 3. Use ALTER TABLE- DROP COLUMN statement to delete city column. 4. Use DESC statement to show the structure of Student table. 5. Use ALTER TABLE – MODIFY COLUMN statement to change the data type of phone column from VARCHAR to BIGINT. 6. Again use the DESC statement to show the structure of Student table.
	9	Creating a duplicate table and setting the Primary Key: 1. Start using the 'College' database (created above) in MySQL Shell. 2. Show all data of Student table by using SELECT statement. 3. Execute 'CREATE TABLE studentcopy SELECT id, name, age, phone, city FROM student; ' command to create a duplicate table called studentcopy.

		4. Show all records of the new table. 5. Execute 'ALTER TABLE studentcopy ADD Primary Key (id);' command to set the ID field as Primary key of studentcopy table. 6. Execute 'DESC studentcopy' command to check table structure.
	10	Deleting only data from table and then using INSERT INTO SELECT: 1. Start using the 'College' database (created above) in MySQL Shell. 2. Show all data of studentcopy table by using SELECT statement. 3. Execute 'TRUNCATE TABLE studentcopy;' command to delete all records in the studentcopy table and then check, it will be empty. 4. Now execute this command to fill the studentcopy table again with the data of student table. ' INSERT INTO studentcopy SELECT * FROM student; ' 5. Check its structure by using the DESC or EXPLAIN statement.
	11	Creating an Index on a table and using the LIMIT clause: 1. Start using the 'College' database (created above) in MySQL Shell. 2. Show all data of studentcopy table by using SELECT statement. 3. Execute ' CREATE INDEX idx_age ON studentcopy (age); ' command to create an index on the age field of studentcopy table. 4. Execute ' SELECT * FROM studentcopy LIMIT 3;' to extract only 3 records.
	12	Applying NOT NULL and Setting Primary Key: 1. Create a new database and name it as 'Pharma'. 2. Set default database to pharma by using USE statement. 3. Create a new Table Customer with fields CID as INT, CNAME as TEXT, CCITY as TEXT, CPHONE as TEXT. 4. Set CID as Primary Key and NOT NULL. 5. Insert at least 20 records in this table.
	13	Creating a database table using MySQL Workbench 8.0: 1. Start MySQL Workbench 8.0 from windows start menu, click on "Local instance MySQL80 root localhost:3306" and enter the root password. 2. In the Navigator pane, click on 'Schemas' tab. All databases are shown. 3. Double click on 'Pharma' database to select it as current database in use. 4. In the Query window, write 'CREATE TABLE supplier (SID INT NOT NULL, SNAME VARCHAR(15), SCITY TEXT(15), SPHONE TEXT(12), Primary Key (SID));' statement for creating a new table Supplier. 5. Press CTRL + ENTER to execute the current statement. The new table is created which can be checked in the left pane by pressing the refresh button. 6. In the next line of Query window write 'SELECT * FROM SUPPLIER;' and press CTRL+ENTER to show all records. The Result Grid below shows empty table.
	14	Creating More Tables 'Pharma' database in MySQL Workbench: 1. Continue using the 'Pharma' database created in practical No-13 above, in MySQL Workbench. 2. Enter at least 20 records in the 'supplier' table by using the result grid user interface. 3. Create following 4 more tables in similar way in the MySQL

		Workbench. a. MedicineType(TID(int), TYPE(text)) b. Medicine (MID(int), MNAME(text), MPRICE(int), MEXPIRY(date), SID(int), TID(int)) c. CustomerOrdersMedicine (ORDID(int), MID(int), Quantity(int)) d. CustomerOrders (ORDID(int), CID(int), ORDDATE(date))
	15	1. Continue using the 'Pharma' database created in practical No-13 & 14 above, in MySQL Workbench. 2. Define Foreign keys in newly created tables. 3. Enter at least 20 records in each table created in practical No-14 above using MySQL Workbench. 4. Then extract specific records from these tables using the WHERE clause, using wildcards, using AND OR NOT operators. 5. Create views for these tables. 6. Combine tables using different MySQL JOIN statements.
	16	Creating an ODBC Connection for MS ACCESS: 1. Open Control Panel and click on "System and Security" option. 2. Click on "Administrative tools". In new window, click on "ODBC Source". 3. ODBC Administrative window opens up. Click "System DSN" Tab. Click "ADD" button. 4. Create new data source window opens up. In the list search for "MySQL ODBC Driver". If the driver is not in the list, then you have to download it as explained in practical No-17 below. 5. Select "MySQL ODBC Driver" and click Finish. A configuration window MySQL Connector/ODBC" appears. 6. Give any name of your choice in "Data Source Name" field. Write "localhost" in TCP/IP Server field. Write "root" in User field and enter root password in password field. Select desired MySQL database in drop down menu and click "Test". "Connection Successful" test result message appears. Click "OK" to complete the process.
	17	Downloading MySQL ODBC Connector: 1. Go to www.mysql.com, click on Downloads. 2. Click on MySQL Community Downloads. Then click on "Connector/ODBC". Download relevant mysqlodbc 8.0 (32/64 bit) MSI installer. Install the downloaded file.
	18	Developing Front-end for MySQL database: 1. Open a blank database in MS ACCESS. 2. Click on External Data, New Data Source, From other sources, and click on ODBC Database. 3. In the new dialog box, click on "Link to the data source by creating a linked table" 4. In the "Select Data Source" dialog box, click on "Machine Data Source", then select the name of ODBC connection and click 'OK'. 5. The connection is established and all the Tables of the database appears. 6. Now create a form for any table of your connected MySQL database and enter new records. 7. Open the same MySQL database in MySQL Workbench and check the new record there. 8. Create a report in MS ACCESS for any table of your MySQL

	database. Front-end (through MS ACCESS Forms and Reports) is created
Reference Material	• https://dev.mysql.com/downloads/mysql/ • https://www.w3schools.com/mysql/default.asp • https://www.mysqltutorial.org

Video Editing

(DIT Part-II)

Total Marks:	100	Theory Marks:	75	Practical Marks:	25
Total Weeks:	20				
Contact Hours per week:	06				
Total Contact Hours:	120				
Theory Hours:	80				
Practical Hours:	40				

GENERAL OBJECTIVES:

After completion of this course, students are expected to be able:

- To Understand the Video Editing in different environment.
- To Design, Edit, Cropdifferent Videos and understand Graphics &colors.
- To Work in Fiver etc as a Free Lancer
- To work with organization and industries

Module	Course Contents	Allotted Weeks	Contact Hours
01	**INTRODUCTION** 1.1. Background and history of video editing 1.2. Goals of editing 1.3. Basics of video editing 1.4. Stages of editing 1.5. Evolution of software	01 Week	06
02	2.1. Introduction to Adobe Premiere Pro 2.2. Installation and activation of Adobe Premiere Pro 2.3. Footage and Aspect ratio 2.4. Video Formats	02 Weeks	12
03	3.1. Different ways to import footage (video) in Premier Pro 3.2. Organizing Assets in different ways 3.3. Preview and Select Assets 3.4. Sequence (timeline) 3.5. Source window in Premiere Pro 3.6. Tools Panel in Premiere Pro 3.7. Timeline in Premiere Pro 3.8. When to cut and why?	03 Week	18
04	4.1. Effects control window 4.2. Video transitions in Premiere Pro 4.3. Video Effects in Premiere Pro 4.4. Opacity and blending modes 4.5. Stabilizing shaky footage 4.6. Adding mask in Premiere Pro 4.7. Different types of cut in video editing 4.8. Continuity of action 4.9. Pacing and Rhythm 4.10. Speed and time re-mapping	04 Weeks	24
05	5.1. Action Edit 5.2. Copy paste attributes in Premiere Pro 5.3. Creating montage in Premiere pro 5.4. Short cut keys in Premiere Pro 5.5. Audio editing 5.6. Supporting software for sound design 5.7. Multi camera editing 5.8. Editing music videos 5.9. Nesting and blending	04 Weeks	24
06	6.1. Titler 6.2. Captions and sub-titles 6.3. Import & work on image sequence 6.4. Graphic tab 6.5. Markers and labels 6.6. Color grading 6.7. Adjustment layers 6.8. Duplicating a person	04 Week	24
07	7.1. Green screen keying	02	12

	7.2. Export media 7.3. After effects	Week	
	Total	20	120

Lab Requirements **(Hardware / Software)**	Adobe Primer Pro
List of Practical	1) Logo Intro Video Creating 2) Green Screen Background Remove 3) Sound Effects Audio production 4) Video Cutting 5) Social Media Lower Thirds 6) Title Sequences 7) Text Animations 8) Documentaries Video Creating 9) Vlogs Video Production 10) YouTube Videos Editing 11) Promotional Videos Creating 12) Tutorials Editing 13) Corporate and Business Videos 14) Real Estate Videos Creating
Reference Material	• GFX Mentor • https://help.adobe.com/archive/en/premiere-pro/cs6/premiere_pro_reference.pdf

Web Development Essentials

(DIT Part-II)

Total Marks:	100	Theory Marks:	75	Practical Marks:	25
Total Weeks:	20				
Contact Hours per week:	06				
Total Contact Hours:	120				
Theory Hours:	40				
Practical Hours:	80				

GENERAL OBJECTIVES:

After completion of this course, students are expected to be able:

- To Understand the Basic of Web Development
- To Understand the HTML, CSS and JavaScriptBasic Code.
- Create HTML5 documents.
- Create CSS stylesheets Layout Design.
- Implement program logic using JavaScript.

Module	Course Contents	Allotted Weeks	Contact Hours
01	**INTERNET AND WORLD WIDE WEB INTERNET** 1.1 Working of internet 1.1.1 Benefits of Internet 1.1.2 Ethics of Internet 1.2 Services of Internet 1.2.1 World Wide Web (www) 1.2.2 Email 1.2.3 Social Networking 1.2.4 Mailing List 1.2.5 News Group 1.3 Web Browser 1.3.1 Functions of Web Browser 1.3.2 Type of Browsers 1.4 Web Server 1.5 Web Directories 1.6 Websites 1.6.1 Static 1.6.2 Dynamic 1.7 Search Engine 1.8 Web Page Program Development 1.8.1 Roles in Web site development team 1.8.2 Web Development Scope 1.9 Scripting languages 1.9.1 JavaScript 1.9.2 PHP 1.10 Web hosting 1.10.1 Web Hosting Services 1.10.2 Types of web Hosting 1.11 Cookie 1.11.1 Types of Cookies 1.11.2 Uses of Cookies 1.11.3 Browser Setting for Cookies 1.11.4 Privacy Concerns about Cookies 1.12 Web 2.0 1.13 Web 3.0	04 Weeks	24
02	**HTML5 INTRODUCTION** 2.1 HTML Editors 2.2 HTML Basic 2.3 HTML Elements 2.4 HTML Attributes 2.5 HTML Headings 2.6 HTML Paragraphs 2.7 HTML Styles 2.8 HTML Formatting 2.9 HTML Quotations 2.10 HTML Comments 2.11 HTML Colors	04 Weeks	24

	2.12 HTML CSS 2.13 HTML Links 2.14 HTML Images 2.15 HTML Favicon 2.16 HTML Tables 2.17 HTML Lists 2.18 HTML Block & Inline 2.19 HTML Classes 2.20 HTML Id 2.21 HTML Iframes 2.22 HTML Head 2.23 HTML Layout 2.24 HTML Forms		
03	**CSS INTRODUCTION** 3.1 CSS Syntax 3.2 CSS Selectors 3.3 CSS How To Use 3.4 CSS Comments 3.5 CSS Colors 3.6 CSS Backgrounds 3.7 CSS Borders 3.8 CSS Margins 3.9 CSS Padding 3.10 CSS Height/Width 3.11 CSS Box Model 3.12 CSS Outline 3.13 CSS Text 3.14 CSS Fonts 3.15 CSS Icons 3.16 CSS Links 3.17 CSS Lists 3.18 CSS Tables 3.19 CSS Display 3.20 CSS Max-width 3.21 CSS Position 3.22 CSS Z-index 3.23 CSS Overflow 3.24 CSS Float 3.25 CSS Inline-block 3.26 CSS Align 3.27 CSS Opacity 3.28 CSS Navigation Bar 3.29 CSS Dropdowns 3.30 CSS Attribute Selectors	06 Weeks	36
04	**JAVASCRIPT** 4.1 JS Introduction 4.2 JS Output 4.3 JS Statements 4.4 JS Structure 4.5 JS Comments	06 Weeks	36

	4.6 JS Variables 4.7 JS Let 4.8 JS Const 4.9 JS Operators 4.10 Functions 4.10.1 User define function 4.10.2 Built-in Function (ABS(), Rand(), Max(), Min(), eval(), parseInt(), parseFloat()) 4.11 JS Arrays 4.12 JS If Else 4.13 JS Switch 4.14 JS For Loop 4.15 JS While Loop		
	Total	20	120

Lab Requirements **(Hardware / Software)**	**Computer Core i3 at least** **04 GB RAM** **320 GB HD** **Internet Connection** **Gmail account** **Notepad++** **Microsoft Visual Code (Latest Edition)**
List of Practical	• Installation of Notepad++ • Visual Studio Installation • HTML HEAD, TITLE, FAVICON TAGS • Usage of STYLE & SCRIPT TAGS • HTML Heading Tags Demonstration i.e. H1-H6 • HTML BODY TAG & ITS ATTRIBUTES • USAGE OF FONT & PARAGRAPH TAGS • DEFINE TABLES IN HTML • INSERT IMAGES IN HTML • USE LISTS IN HTML • USE DIV TAGS • DEFINE IFRAME, AUDIO & VIDEOS • Define HTML Internal / External Linking • Create HTML Form • Apply CSS styles on Text, Font, Lists • APPLYING CSS ON TABLE, IMAGES • Usage of BORDER & MARGIN ON different elements • Dropdown & Navigation bar • Use JavaScript for data entry • Variables. Constants & Data types • Different conditional Statements like if, if-else & Switch • Usage of Loops i.e. for & while • Use JavaScript Dialog boxes, Like Prompt, Input, Warnings • Use JavaScript Validation • Define functions in JavaScript
Reference Material	• W3School • HTML, DHTM, JAVASCRIP& PERAL by Ivan Bayross • HTML 5 COMPLETE REFERENCE • WEB DESIGN WITH HTML & CSS by Jeremy Osborn, Jennifer Smith, and the AGI Training Team

Graphics Design

(DIT Part-II)

Total Marks:	100	Theory Marks:	75	Practical Marks	25
Total Weeks:	20				
Contact Hours per week:	06				
Total Contact Hours:	120				
Theory Hours:	40				
Practical Hours:	80				

GENERAL OBJECTIVES:

After the completion of this course, students are expected to be able:

- To Understand the Adobe Photoshop and Coral Draw in different environment.
- To Design different logos, images and understand colors.
- To work with organization and industries
- To be able to write Urdu in digital environment.

Module	Course Contents	Allotted Weeks	Contact Hours
Adobe Photoshop 2016			
01	**EXPLORING THE PHOTOSHOP ENVIRONMENT** 1.1. Explore the Photoshop interface 1.2. Customize the Workspace 1.3. Explore the Navigation Tools	01 Week	06
02	**WORKING WITH IMAGE AREAS** 2.1 Select Image Areas 2.2 Save a Selection 2.3 Modify a Selection 2.4 Setting Color Space 2.4.1 Calibrate and Profile your Monitor 2.4.2 Set a Working Color Space in Photoshop 2.4.3 Convert Image from one Color Space to Another 2.4.4 Manage Printing and Color 2.5 Enhancing Image 2.5.1 Print Strokes on an Image 2.5.2 Apply Filter Effects 2.5.3 Convert an Image to Black and White 2.5.4 Blend Layers 2.5.5 Merge Layers and Flatten Image 2.5.6 Convert Color Images to Grayscale	02 Weeks	12
03	**WORKING WITH LAYERS** 3.1 Create Layers 3.2 Create Type Layers 3.3 Transform Layers 3.4 Alter Type Properties 3.5 Apply Layer Styles 3.6 Undo Previous Steps 3.7 Arrange and Group Layers	01 Week	06
04	4.1 Saving Images for Web and Print 4.1.1 Save Images for Use in Print Application 4.1.2 Save Images for the Web 4.1.3 Save Images as PDF 4.2 Managing Assets with Adobe@ Bridge 4.2.1 Explore Adobe Bridge 4.2.2 Work with Adobe Bridge 4.2.3 Work with Stacks and Filters in Adobe Bridge 4.2.4 Apply Metadata and Keywords to Files 4.2.5 Preparing Web Images 4.2.6 Change Measurement Units 4.2.7 Reduce File Size 4.3 Creating Web Page Layouts 4.3.1 Simulate a Web Page 4.3.2 Create Web Page Background 4.3.3 Draw Editable Vector Shapes 4.3.4 Create Effects 4.3.5 Export a Web Page	02 Weeks	12
05	5.1 Enhancing Photographs	03	12

	5.1.1 Retouch Photographs Using Photoshop Tools 5.1.2 Create Patterns 5.1.3 Create Swatches and Gradients 5.1.4 Create a Custom Brush 5.1.5 Create Custom Patterns 5.2 Creating Special Effects 5.2.1 Preview Text Effects Using Layer Comps 5.2.2 Warp an Image 5.3 Automating Tasks 5.3.1 Create an Action 5.3.2 Manage Action 5.4 Adjusting RGB Color 5.4.1 Meet Color Correction Objective 5.4.2 Locate Highlights Shadows and Neutral Areas 5.4.3 Make Automatic Color and Contrast Adjustment 5.4.4 Make Basic Curve Adjustment 5.5 Sharpening Images 5.5.1 Apply Un-sharp Images 5.5.2 Sharpen an Image	Weeks	
Coral Draw 2016			
06	**BASICS:** 6.1 Exploring the Corel DRAW Interface 6.2 Setup Drawing Page 6.3 Corel DRAW Basic 6.4 Manage Workspaces 6.5 Customizing the Command Bar 6.6 Saving and Printing Drawing	02 Week	06
07	7.1 Shapes and Lines: 7.1.1 Basic Shapes 7.1.2 Working with Paths 7.1.3 Modify Paths 7.1.4 Adding Text to Objects 7.2 Colors 7.2.1 Fills and Outline 7.2.2 Custom File 7.2.3 Custom Strokes 7.2.4 Drop Shadows 7.2.5 Modify Outline 7.2.6 Transform Objects	01 Week	06
08	8.1 **Working with Text** 8.1.1 Format Artistic Text 8.1.2 Fit Text to a Path 8.1.3 Create Paragraph Text 8.1.4 Wrap Paragraph Text 8.1.5 Modify OCT Text 8.1.6 Importing Image Text 8.1.7 Insert Special Characters 8.1.8 Text Effects 8.2 Working with Objects	02 Weeks	12

	8.2.1 Modify Objects 8.2.2 Add Graphics 8.2.3 Add Clipart 8.2.4 Spray Objects 8.3 Styles, Templates Symbols 8.3.1 Working with text Styles 8.3.2 Working with Templates 8.3.3 Create Symbols		
09	9.1 Layers 9.1.1 New Layers 9.1.2 Manipulate Layer 9.2 Bitmaps 9.2.1 Import and Adjust Bitmaps 9.2.2 Trace Bitmaps 9.3 Advanced Printing Options 9.3.1 Edit a Print Style 9.3.2 Merge Text with Drawing	02 Weeks	12
10	**Urdu Inpage** 10.1 Toggle English / Urdu 10.2 Tools 10.3 Ribbon 10.4 Status Bar 10.5 Rulers 10.6 Document Area 10.7 Scroll Bars 10.8 Cursors 10.9 Text Box 10.10 Title Text Box 10.11 Picture Box 10.12 Graphic Box 10.13 Line 10.14 Guides 10.15 Text Chain	04 Weeks	24
	Total	20	120

Lab Requirements **(Hardware / Software)**	Adobe Photoshop 2016, Coral Draw 2016
List of Practical	1. Customize pictures 2. Design Visiting Card 3. Design Brochure 4. Design Book Front Page 5. Design Banners 6. Design Logos 7. Design ID Card 8. Design Social Media Post 9. Design letter paid 10. Design Stamp
Reference Material	• GFX Mentor • www.adobe.com

Capstone Project

(DIT Part-II)

Total Project Marks:	100
Total Weeks:	20
Contact Hours per week:	06
Total Contact Hours:	120 Hours (Supervisor Guidance + Project Report)

GENERAL OBJECTIVES:

After the completion of this course, students are expected to be able to:

- Apply the learned concepts in real world situations.
- Identify a computational problem that can be solved through software.
- Design software solutions for organizational or individual computational problems.
- Format a problem and its solution in a documented form.
- Develop skills for testing the quality of an application software.
- Sell his/her skills in the freelancing market.

S. No	PROJECT ACTIVITIES	AllottedWeeks	Contact Hours
1	Exploring following fields for finding a problem. 1. Application Development using Python 2. Database Development 3. Web Application Development 4. Graphic Design	02 weeks	12
2	Understanding the selected problem in detail	02 weeks	12
3	Developing Solution for the selected problem	10 weeks	60
4	Testing the developed solution	02 weeks	12
5	Modification/Changes in the solution (if required)	02 weeks	12
6	Preparation of Project Report	02 weeks	12

ENGLISH-I
Part-III

Total Marks: 100
Total Weeks: 20
Contact Hours Per Week: 06
Total Contact Hours: 120

Sr. No.	Unit No.	Description / Main Topics	Allotted week(s)
1.	Book-I Lesson-2	Clearing in the Sky	2 weeks
2.	Book-I Lesson-3	Dark they were, and Golden-Eyed	2 weeks
3.	Book-I Lesson-6	The Reward	2 weeks
4.	Book-I Lesson-8	The Gulistan of Sa'di	1 week
5.	Book-I Lesson-9	The Foolish Quack	1 week
6.	Book-I Lesson-11	I have a dream	1 week
7.	Book-III Play-2	A Visit to Small Planet	2 weeks
8.	Book-III Poems	Poem 2 (Night Mail) Poem 10 (The Hollow Men)	1 week
9.	Grammar & Composition 11-12 Punjab Curriculum and Textbook Board, Lahore	Application Writing 17.7-17.12, Page No. 84-89 LetterWriting 18.1-18.7, (Informal Letters Page No. 90-94)	2 weeks
10.	Grammar & Composition 11-12 Punjab Curriculum and Textbook Board, Lahore	Verb Form Correction 10.1-10.3.2, Tenses (Page No. 25-30)	2 weeks
11.	Grammar & Composition 11-12 Punjab Curriculum and Textbook Board, Lahore	Pairs of words (Page No. 46-60)	2 weeks
12.	Grammar & Composition 11-12 Punjab Curriculum and Textbook Board, Lahore	Punctuations 9.1-9.8 (Page No. 21-25)	2 weeks

Course of Studies: Intermediate English Book-I
Intermediate English Book-III
English Grammar & Composition 11-12
(Punjab Curriculum and Textbook Board, Lahore)

PBTE, LAHORE

DIT-2 Year Curriculum

Urdu-I

(Part-III)

Total Theory Marks: 100

Total Weeks: 20

Contact Hours per Week: 06

Total Contact Hours: 120

نمبر شمار	بنیادی موضوع	عنوانات	دورانیہ
		حصہ نثر	
۱	**مضامین**	اسوۂ حسنہ از سید سلیمان ندوی	ایک ہفتہ
۲		اپنی مدد آپ از سر سید احمد خان	تین دن
۳		سر سید کے اخلاق و خصائل از مولانا الطاف حسین حالی	تین دن
۴		ابوالقاسم الزھراوی از حمید عسکری	ایک ہفتہ
۵	افسانہ	اوور کوٹ از غلام عباس	تین دن
۶	افسانہ	سفارش از احمد ندیم قاسمی	تین دن
۷	سفرنامہ	کیا واقعی دنیا گول ہے از ابنِ انشاء	تین دن
۸	پاکستانی ادب لوک کہانی	دوستی کا پھل از شفیع عقیل	تین دن
۹	مکاتیب	۱) مرزا غالب بہ نام مرزا ہرگوپال تفتہ ۲) علامہ محمد اقبال بہ نام مولانا گرامی	ایک ہفتہ
۱۰	طنز و مزاح	لاہور کا جغرافیہ از پطرس بخاری	ایک ہفتہ
		حصہ نظم	
۱۱	حمد و نعت	حمد از امیر مینائی نعت از ماہر القادری	ایک ہفتہ
۱۲	مرثیہ	میدان کربلا میں صبح کا منظر از میر انیس	تین دن
۱۳	اصلاحی نظم	تسلیم و رضا از نظیر اکبر آبادی	ایک ہفتہ
۱۴		خطاب بہ جوانان اسلام از علامہ محمد اقبالؒ	ایک ہفتہ
۱۵	طنز و مزاح	ایپسٹریکٹ آرٹ از سیّد محمد جعفری	تین دن
۱۶		قطعات از مرزا محمود سرحدی	تین دن
۱۷	پاکستانی علاقائی ادب	وحدانیت از مست توکلی/مترجم طارق قریشی	تین دن

		حصہ غزل	
۱۸		میر تقی میر ۱) جس سر کو غرور آج ہے یہاں تاج وری کا ۲) گل کو ہوتا صبا! قرار اے کاش	ایک ہفتہ
۱۹		حیدر علی آتش ۱) یہ آرزو تھی تجھے گل کے روبرو کرتے	ایک ہفتہ
۲۰		مومن خان مومن ۱) اثر اس کو ذرا نہیں ہوتا	
۲۱		داغ دہلوی ۱) پھرے راہ سے وہ یہاں آتے آتے ۲) خاطر سے یا لحاظ سے وہ مان تو گیا	ایک ہفتہ
		قواعد و انشا	
	قواعد		
۲۲	علم بیان	تشبیہ۔ استعارہ۔ تلمیح تعریف اور مثالیں	ایک ہفتہ
۲۳		مطلع۔ مقطع۔ قافیہ۔ ردیف تعریف اور مثالیں	ایک ہفتہ
۲۴	انشا	درخواست نویسی۔ رسید نویسی۔ مکالمہ نگاری۔ روداد نویسی	تین ہفتے

سرمایہ اردو (گیارھویں جماعت)

مولفین: ڈاکٹر محمد خان اشرف، پروفیسر ایاز اصغر شاھین، محمد زبیر ساھی

ایڈیٹرز: پروفیسر حفیظ صدیقی، پروفیسر افتخار الدین سہیل

ناشر: پنجاب ٹیکسٹ بک بورڈ، لاہور

نصاب تعلیمات اسلامیات (لازمی)

(برائے جماعت گیارہویں)

Total Theory Marks:	50
Total Weeks:	20
Contact Hours per Week:	03
Total Contact Hours:	60

باب اول:

بنیادی عقائد	1۔	عقیدہ توحید: تعارف واقسام، اہمیت (قرآن وسنت) کی روشنی میں انسانی زندگی پر اثرات۔	چار ہفتے
	2۔	عقیدہ رسالت: تعارف، نبی ورسول میں فرق، اہمیت قرآن سنت کی روشنی میں رسالت محمدی ﷺ کی خصوصیات۔	
	3۔	ملائکہ پر ایمان، تعارف، مشہور فرشتے، اہمیت (قرآن وسنت) کی روشنی میں۔	
	4۔	آسمانی کتابوں پر ایمان، تعارف، مشہور آسمانی کتابیں، آخری آسمانی کتاب کی خصوصیات۔	
	5۔	عقیدہ آخرت، تعارف، اہمیت (قرآن وسنت کی روشنی میں) انسانی زندگی پر اثرات۔	

باب دوم: ارکان اسلام

اسلامی تشخص اور عبادات	1۔	کلمہ طیبہ، تعریف وتوضیح	چھ ہفتے
	2۔	نماز: تعارف (ارکان نماز: شرائط نماز) اہمیت وفضیلت (قرآن وسنت کی روشنی میں) فوائد	
	3۔	روزہ، تعارف، اہمیت وفضیلت (قرآن وسنت کی روشنی میں) فوائد۔	
	4۔	زکوٰۃ، تعارف، (مصارف، زکوٰۃ، نصاب زکوٰۃ) اہمیت وفضیلت (قرآن وسنت کی روشنی میں) فوائد	
	5۔	حج، تعارف، (مناسک حج) اہمیت وفضیلت (قرآن وسنت کی روشنی میں) فوائد	
	6۔	حقوق العباد (والدین، اولاد، ہمسایہ)	
	7۔	معاشرتی ذمہ داریاں (ایفائے عہد۔ دیانتداری، عدل وانصاف)	

باب سوم:

اسوۂ رسول اکرم ﷺ	1۔	رسول کریم ﷺ بحیثیت رحمۃ اللعالمین (عورتوں، بچوں، غلاموں)	چار ہفتے
	2۔	اخلاق حسنہ (اخوت، صبر واستقلال، عفوودرگزر)	

باب چہارم:

تعارف قرآن و سنت	1۔ 2۔	تعارف قرآن وحدیث (اسماء القرآن، نزول قرآن، مکی و مدنی سورتیں، نزول قرآن تعارف حدیث وسنت حدیث کا تعارف، اقسام، سنت کا تعارف 8 منتخب آیات کا ترجمہ وتشریح 8 منتخب حدیثوں کا ترجمہ وتشریح	چار ہفتے

منتخب آیات

1۔ لقد کان لکم فی رسول اللہ اسوۃ حسنہ

2۔ واعتصمو ا بحبل اللہ جمعیا و لا تفرقوا

3۔ ان اکرمکم عند اللہ اتقاکم

4. لن تنالو البر حتیٰ تنفقو ا مما تحبون

5. وما اٰتکم الرسول فخذوہ وما نھا کم عنہ فانتھوا

6. ان الصلوٰۃ تنھیٰ عن الفحشاء والمنکر.

7. ان اللہ یامر کم بالعدل والاحسان

8. انانحن نزلنا الذکرو وانا لہ لحافظون

احادیث

1. انما الاعمال بالنیات وانمالکل امری مانویٰ

2. انما بعث لا تم مکارم لاخلاق

3. لایومن احد کم حتیٰ اکون احب الیہ من والدہ و ولدہ والناس

4. لا یومن احد کم حتیٰ یحب لاخیہ مایحب لنفسہ

5. المسلم من سلم المسلمون من لسانہ ویدہ

6. کل المسلم علی المسلم حرام دمہ ومالہ و عرضہ

7. المومن اخواالمومن

8. الصدق ینجی والکذب یھلک

مجوزہ کتاب: اسلامیات (لازمی) برائے انٹرمیڈیٹ کلاسز

مصنفین: پروفیسر حسن الدین ہاشمی، پروفیسر محبوب الرحمٰن، شیخ سعید اختر، مولانا تلمیز الحسن رضوی، عنایت علی خان، مولانا عبدالرشید نعمانی

ناشر: مکتبہ عالیہ، لاہور (برائے پنجاب ٹیکسٹ بک بورڈ لاہور)

اخلاقیات لازمی(ETHICS)

(غیر مسلموں کیلئے)

Part-III

Total Theory Marks:	50
Total Weeks:	20
Contact Hours Per Week:	03
Total Contact Hours:	60

باب اول: **مذاہب کا تعارف** 6 ہفتے

مذہب کی سماجی، نفسیاتی تفہیم، مذہب پر معاشرے کے اثرات، وحدت ادیان کا تصور، مذہب اور سائنس۔

باب دوم: **پاکستان میں مختلف مذاہب** 4 ہفتے

اسلام، مسیحیت، ہندو دھرم

باب سوم: **اخلاقی اقدار** 4 ہفتے

اجتماعی عدل اور مساوات، معاشرتی ادارے، کام کی جگہ پر پابندی وقت کی اہمیت

باب چہارم: **آداب** 4 ہفتے

کام کی جگہ کے آداب، انتظامیہ، ماتحت عملہ

باب پنجم: **مشاہیر** 2 ہفتے

نیلسن منڈیلا، عبدالستار ایدھی، مدر ٹریسا، ڈاکٹر محمد یونس، نجیب محفوظ، جمشید نسروان جی مہتا

مصنفین: 1- ڈاکٹر عبداللہ ہاشمی 2- ڈاکٹر محمد شفیع مرزا

ناشر: لاہور برائے پنجاب ٹیکسٹ بک بورڈ، لاہور آزاد بک ڈپو،

Tarjuma Tul Quran
Part-III

Total Theory Marks: 50
Total Weeks: 20
Contact Hours Per Week: 03
Total Contact Hours: 60

نمبر شمار	سورۃ		عنوانات	ہفتے اور ہفتہ وار کلاسیں
۱	سورۃ بقرۃ	i	رکوع نمبر 01 تا 03 متن ترجمہ آیات 01 تا 29	07 ہفتے 21 کلاسیں
		ii	رکوع نمبر 08 تا 09 متن ترجمہ آیات 62 تا 82	
		iii	رکوع نمبر 15 تا 16 متن ترجمہ آیات 121 تا 141	
		iv	رکوع نمبر 21 تا 23 متن ترجمہ آیات 168 تا 188	
		v	رکوع نمبر 27 تا 31 متن ترجمہ آیات 216 تا 242	
		vi	رکوع نمبر 37 تا 40 متن ترجمہ آیات 274 تا 286	
۲	سورۃ آل عمران	i	رکوع نمبر 01 تا 02 متن ترجمہ آیات 01 تا 20	
		ii	رکوع نمبر 12 تا 14 ، متن ترجمہ آیات 110 تا 143	تین ہفتے 9 کلاسیں
		iii	رکوع نمبر 18 تا 20 متن ترجمہ آیات 172 تا 200	
۳	سورۃ الانفال	i	رکوع نمبر 05 تا 07 متن ترجمہ آیات 38 تا 58	02 ہفتے 6 کلاسیں
		ii	رکوع نمبر 09 تا 10 متن ترجمہ آیات 65 تا 75	
۴	سورۃ توبہ	i	رکوع نمبر 01 تا 02، متن ترجمہ آیات 01 تا 16	تین ہفتے 9 کلاسیں
		ii	رکوع نمبر 05 تا 06، متن ترجمہ آیات 30 تا 42	
		iii	رکوع نمبر 13 تا 16 ، متن ترجمہ آیات 100 تا 129	
۵			مشقی سوالات	3 ہفتے 9 کلاسیں
۶			(امتحانات کی تیاری)	2 ہفتے

Reference Book: Tarjuma Tul Quran
(Punjab Curriculum and Textbook Board, Lahore)

CIVICS (compulsory)
(For Non-Muslim Students)
(Part-III)

Total theory Marks: **50**
Total weeks: **20**
Contact hours per week: **03**
Total Contact Hours: **60**

The outline of the courses contains the following major themes and their contents:-

Chapter 1. Man and Society 04 weeks

1. Sociability of Man
2. Impact of social environment of man
3. Processes of socialization
4. Concepts of Family, Nation, Millat and state.

Chapter 2. Individual and State 03 weeks

1. Meaning of State and its elements (Population, Territory, Government and Sovereignty)
2. Islamic Concept of State.
3. Functions of State (Defence, Law and Order welfare etc.)

Chapter 3. Individual and the World 04 weeks

1. Rational of International Cooperation, Fields of Cooperation (Political, Economic, Social Cultural, Educational, Scientific Technology etc.)
2. UN Aims and Object, main organs and specialized agencies (UNE, UNESCO, UNICEF, WHO)

Chapter 4.Citizeship 04 weeks

1. Meaning of Citizenship
2. Qualities of good citizenship
3. Rights and duties of Citizen in a state.

Chapter 5.Rights and Duties of a Citizen in Pakistan 02 weeks

1. Rights and Duties of Citizen in Islamic State with special reference to Khutba-e-Hujjat-ul-Wida.
2. Rights and Duties of No.-Muslim in Pakistan under the Constitution.

Revision + Test 03 weeks

MATHEMATICS-I
Part-III

Total Marks: 100
Total Weeks: 20
Contact Hours Per Week: 06
Total Contact Hours: 120

UNIT-I (Number Systems) 10 H

i- Rational Numbers and Irrational Numbers.
Decimal Representation of rational and Irrational Numbers.
ii- Properties of real numbers.
Addition Laws, Multiplication, Properties of Equality and Inequalities.
iii- Complex Numbers.
Operations on complex numbers, Complex Numbers as Ordered Pairs of Real Numbers, Properties of the Fundamental Operations on Complex Numbers, a Special Subset of C.
iv- The real Line.
The Real Plane of the Coordinate Plan.

UNIT-II (Sets Functions and Groups) 08 H

i- Functions.
Linear and Quadratic Functions
ii- Inverse of a Function
iii- Binary Operations.
Properties of Binary Operations
iv- Groups
v- Solution of Linear Equations
vi- Reversal Law of Inverses

UNIT-III (Matrices and Determinants) 12 H

i- Introduction.
Addition of Matrices, Scalar Multiplication, Subtraction of Matrices, Multiplication of two Matrices.
ii- Determinants of a 2x2 Matix.
Singular and Non-Singular Matrices, Adjoint of a 2x2 Matrix, Inverse of a 2 x 2 Matix.
iii- Solution of simultaneous Linear Equations by using Matrices.
iv- Properties of Matrix Addition, Scalar and Matix Multiplication.
v- Determinants.
Minor and Cofactor of an Element of a Matix or its Determinant, Determinant of a Square Matix of Order $n \geq 3$
vi- Properties of Determinants which help in their Evaluation.
vii- Adjoint and inverse of a Square Matix of Order $n \geq 3$
viii- Elementary Row and Column Operations on a Matrix.
ix- Echelon and Reduced Echelon Forms of Matrices.
x- Cramer's Rule.

UNIT-IV (Quadratic Equation) 12 H

i- Introduction.
Solution of Quadratic Equations.
ii- Solution of Equations Reducible to the Quadratic Equation.
iii- Three Cube roots of Unity.
Properties of Cube Roots of Unity.
iv- Polynomial Function
v- Synthetic Division
vi- Relations Between the Roots and the Coefficients of Quadratic Equation
vii- Formation of an Equation whose Roots are Given
viii- Nature of the Roots of a Quadratic Equation
ix- System of two equations involving tow variables
x- Problems on Quadratic Equations.

UNIT-V (Partial Factions) 10 H

i- Introduction
ii- Rational Fraction.
Proper Rational Fraction, Improper Rational Fraction.
iii- Resolution of Rational Fraction P(x) / Q(x) into Partial Fractions

UNIT-VI (Sequences and Series) 12 H

i- Arithmetic Progression (A.P)
ii- Arithmetic Mean (A.M)
Arithmetic Means Between two given numbers
iii- Series
iv- Geometric Progression (G.P)
v- Geometric Means.
Geometric Means between two given numbers
vi- Sum of n terms of Geometric Series
vii- The Infinite Geometric Series.

UNIT-VII (Permutations Combination and Probability) 10 H

i- Permutation.
Permutation of Things not all Deferent, Circular Permutation
ii- Combinations
Complementary Combination
iii- Probability
Probability that an event does not occur, Estimation Probability and Tally Marks, Addition of Probabilities multiplication of Probabilities.

UNIT-VIII (Mathematical Induction and Binomial Theorem) 10 H

i- Binomial theorem.
The Middle Term in the Expansion of $(a+x)^n$, Some Deductions from the Binomial Expansion of $(a+x)^n$
ii- The Binomial theorem when the Index n is a negative Integer or a Fraction
iii- Application of the Binomial Theorem

UNIT-IX (Fundamental of Trigonometry) 12 H

i- Units of Measures of Angles.
Sexagesimal System, Conversion from D" M'S to a decimal form and vice versa, Circular System (Radians)
ii- Relation between the Length of an arc of a Circle and the Circular Measure of its Central Angle. Conversion of Radian into degree and Vice Versa
iii- General angle (Coterminal Angles)
iv- Angle in the Standard Position
v- Trigonometric Functions
vi- Trigonometric Functions of any angle
vii- Fundamental Identities
viii- Signs of the Trigonometric function

UNIT-X (Trigonometric Identities) 12 H

i- Introduction.
Distance Formula, Fundamental Law of Trigonometry
ii- Deduction from Fundamental Law
iii- Trigonometric Ratios of Allied Angles
iv- Further Application of Basic Identities
v- Double Angle Identities
vi- Half Angle Identities
vii- Triple Angle Identities
viii- Sum, Difference and Product of Sones and Cosines

UNIT-XI (Application of Trigonometry) 12 H

i- Tables of Trigonometric Ratios
ii- Solution of Right Triangles
iii- Heights and Distances
iv- Angles of Elevation and Depression
v- Oblique Triangles
The Law of Cosine, The Law of Sines, The Law of Tangents, Half Angle Formulas
vi- Solutions Oblique Triangles
When measures of one side and two angles are given
When Measures of two sides and their included angles are given
When measures of three sides are given.
vii- Area of Triangle
viii- Circles Connected with Triangle
Circum-Circle, In-Circle, Escribed Circles
ix- Engineering and Circles Connected with Triangles

Recommended Books: "Mathematics Part-I"

Authors: Prof. Shamshad Muhammad Lodhi
Prof. Muhammad Sharif Ghauri
Prof. Sanaullah Bhatti
Prof. Khalid Saleem
Published By: Tariq Book Centre Jhelum for Punjab Textbook Board Lahore
.

ECONOMICS-I
(Part-III)

Total Theory Marks: 100
Total Weeks: 20
Contact Hours per Week: 06
Total Contact Hours: 120

Chapter-I Nature and Scope of Economics

Concepts	Contents 3 weeks
1. Nature and scope of Economics 2. Definition and law of Economics	**A. Introduction** 1. Wants and satisfaction 2. Goods and services 3. Utility and scarcity 4. Economics problems and its nature 5. Definition by:- a. Adam Smith b. Alfred Marshall c. Loonier Robbins. **B. Meaning of :** 1. Micro Economics, Macroeconomics, Positive and normative economics. 2. Economic laws and their nature

Chapter-II Consumer's Behavior and its analysis

Concepts	Contents 2 weeks
1. consumer's behavior 2. Utility approach 3. Indifference	**1.** Definition 2. Meaning 3. Rationale 4. The law of diminishing marginal utility with table and graph. 5. The law of equimarginal utility or law of substitution with formula and diagram. 6. Indifference curve i- Definition and Characteristics (graphical presentation)

Chapter-III Demand

Concepts	Contents 2 weeks
1. Law of demand and practical uses. 2. Demand elasticity	**1. Definition** **2.** Law of demand 3. Demand function and functional equation of demand. 4. Movement along with demand curve and shift in demand curve 5. Price elasticity of demand (Arc & point) and methods of measurement. 6. Concepts of income elasticity and cross-elasticity of demand. 7. Factors influencing the elasticity of demand 8. Practical uses of the concept of elasticity of demand.

Chapter-IV Supply

Concepts	Contents 3 weeks
1. Law of supply and practical uses. 2. Elasticity	1. Definitions stock and supply 2. Law of Supply 3. Supply functions and functional equation of supply 4. Movement along with supply curve and shift in supply curve 5. Elasticity of supply and its measurement 6. Factors influencing the elasticity of supply 7. Practical uses of the concepts

Chapter-V Equilibrium

Concepts	Contents 2 weeks
1. Equilibrium in demand and supply etc.	1. Concept of equilibrium 2. Equilibrium of demand and supply 3. Equilibrium in price and equilibrium in out put 4. The effect on equilibrium in price and output put due to change in demand and supply.

Chapter-VI Theory of Production

Concepts	Contents 2 weeks
1. Theory of production 2. Factors of production	**1.** Meaning of production 2. Characteristics and importance of FOP 3. Factors of production:- a. Land b. Labour c. Capital d. Organization

Chapter-VII Scales of Production and Laws of Returns

Concepts	Contents 2 weeks
1. Scales of production 2. Laws of Returns	Meaning 1. Scale of production 2. Economies and diseconomies internal and external 3. Merits and demerits of large scale increasing, constant, diminishing and their relation with the cost of production 4. Laws of production (increasing, constant, diminishing) and their relation with the cost of production

Chapter-VIII Revenue Analysis

Concepts	Contents 2 weeks
1. Application of Revenue curves in price and output determination	**1.** Definition 2. Total, marginal and average revenue under perfect competition and monopoly 3. Price and output determination and short and long run under perfect competition and monopoly

Chapter-IX Distribution : Factors Pricing

Concepts	Contents 2 weeks
1. Factors pricing 2. Productivity	**1.** Rent, meaning, Kinds and Recardian theory of rent 2. Wages definition, meaning and kinds, Marginal productivity theory. 3. Interest: Meaning and Kinds 4. Profit: Meaning and kinds 5. Difference between profit and interest

Recommended Book: Economics Part-I

Authors: 1) Mahmood Ahmad Ch. 2) Azra Ismat Ullah Awan

Editors: 1) Rubina Qamar Qureshi 2) Muhammad Ikram Rana

Publisher: Muhammad Pulisher & Stationers, Lahore.

STATISTICS-I
Part-III

Total Theory Marks: 100
Total Weeks: 20
Contact Hours per Week: 06
Total Contact Hours: 120

Chapter No / Module	Main Topics & Sub Topic	Allotted Weeks
1. Collection and Presentation of Data	1.1 introduction i. Define Statistics, types of Statistics, (Decretive and Inferential) ii. Define population and sample, parameter and statistic. 1.2 Variable i. Define Constant and Variable ii. Describe the types of variable; differentiate between qualitative and quantitative variables. 1.3 Statistical Data i. Define statistical Data, types of statistical data, differentiate between qualitative and quantitative date, differentiate between discrete and continuous data. ii. Define primary and secondary date. 1.4 Presentation of Statistical Date i. Condensation of data through • Data array • Through classification and tabulation • By diagrammatic representation ii. Define Class, Class frequency, Frequency Distribution; class Boundaries, class width class mark. iii. Define and construct cumulative frequency distribution. iv. Describe diagrammatic / graph representation of data. v. Define and Construct • Simple Bar Chart • Multiple Bar Chart • Pie Chart vi. Define and Construct • Histogram • Frequency Polygon	03 weeks
2. Measures of Central Tendency	2.1 Central Tendency or Measures of Location i. Define Central Tendency ii. Define an average and list its types 2.2 Arithmetic Mean i. Define Arithmetic Mean ii. Calculate Arithmetic Mean for individual observation (raw data)	03 weeks

	iii. Calculate Arithmetic Mean for group data 2.3 Median i. Define Median, quartiles, Deciles and percentiles. ii. Determine 2.4 Mode i. Define Mode and discuss its properties ii. Calculate Mode for: • Individual Observation (raw data) • Grouped data 2.5 Geometric Mean i. Define Geometric Mean ii. Calculate geometric mean for • Ungrouped data • Groped data 2.6 Harmonic Mean i. Define Harmonic Mean and discuss its properties ii. Calculate Harmonic mean for • Ungrouped data • Grouped data	
3. Measures of Dispersion	3.1 Dispersion i. Define dispersion ii. Know, what the measure of dispersion is iii. Identify absolute and relative measures of dispersion • Range • Quartiles deviation • Mean deviation • Standard deviation and coefficient of variation 3.2 Range i. Define Range ii. Determine the range • Individual observation (ungrouped data) • Grouped data 3.3 Quartile Deviation i. Define quartile deviation ii. Calculate the quartile deviation • Ungrouped data • Grouped data 3.4 Mean Deviation i. Define Mean deviation • From Mean • From Median	03 weeks

	ii. Calculate the Mean Deviation: • From Mean (ungrouped data) • From Median (ungrouped data) • From Mean (Grouped data) • From Median (Grouped data) 3.5 Standard Deviation i. Define Variance, Standard deviation and coefficient of variation. ii. Determine the properties of variance and standard deviation. iii. Calculate variance, standard deviation and coefficient of variation for individual observation (raw data) iv. Calculate variance and standard deviation and its coefficient for grouped data.	
4. Index Number	4.1 Index Number i. Define Index Number. ii. Describe the Steps involved in the construction of whole slate price numbers. iii. Define simple and composite price index numbers. iv. Calculate simple price index numbers: • By fixed base method. • By Chain base method v. Calculate composite price index numbers using the method of simple aggregates. vi. Describe the method of simple average of price relations. vii. Calculate composite price index using the method of simple average of price relations. viii. Define weighted aggregate price index numbers. ix. Calculate weighted aggregative price index numbers using: • Laspeyer's Formula • Passche's Formula • Fisher's Formula	03 weeks
05. Probability	**1.1 Introduction to Probability** i. Define the following. • Random Experiment • Sample space, Sample point and random event • Simple and compound event • Mutually and not mutually exclusive events. ii. Explain the term :Probability" through: • Classical approach. • Relative frequency definition • By its axiomatic definition iii. Recognize the formula for probability of occurrence of an event iv. Apply the formula for finding probability in simple cases.	03 weeks

	1.2 Counting Techniques i. Describe the fundamental principal of counting ii. Explain the meaning of permutation iii. Deduce that: $npr = \frac{n!}{(n-r)!}$ iv. Explain the meaning of combination. Deduce that $nCr = \frac{n!}{(n-r)!r!}$ 1.3 Laws of probability i. Describe the probability of non-occurrence of an event. ii. Describe the law of probability of complementation iii. State addition law of probability iv. Apply addition law of probability to solve real life problem. v. Explain dependent and independent events. vi. Define conditional probability vii. State the law of probability under multiplication. viii. Apply multiplication law to solve real life problems.	
6. Random Variable and Probability Distribution	2.1 Random Variable i. Define random variable ii. Differentiate between discrete and continuous random variables with real life examples. 2.2 Discrete Random Variables i. Describe the probability distribution of a discrete random variable. ii. Find the probability distribution of discrete random variable. iii. Recognize probability mass function. iv. Define the expected value of discrete random variable. v. Find the expected value of a discrete random variable. vi. Describe and verify the properties of expected value of a discrete random variable. 2.3 Continuous Random Variable i. Define • Probability distribution of a continuous random variable. • Probability density function. ii. Define expected value of a continuous random variable. iii. Find the expected value of a continuous random variable	03 weeks
7. Special discrete probability Distribution	3.1 Bernoulli Distribution i. Define the following: • The Bernoulli trials. • Bernoulli random variable. • A Bernoulli probability distribution • A Bernoulli Probability mass function. ii. Calculate mean and variance of Bernoulli probability distribution. iii. Solve real life problems using Bernoulli probability distribution.	02 weeks

	3.2 Binomial Probability Distribution i. Define the following: • A binomial experiment • A binomial random variable • A binomial probability distribution • A binomial probability mass function. ii. Calculate mean and variance of binomial probability distribution. iii. Solve real life problems using binomial probability distribution.	

Recommended Book: Statistics (Part-I)
Author: 1) Dr. Faqir Muhammad
2) Mr. Amjad Mehmood
Editor: Mazhar Hayat, SS, Punjab Textbook Board, Lahore.
Publisher: Saeed Book Center, Lahore, for Punjab Textbook Board, Lahore.

PHYSICS-I

(PART-III)

(Theory 85 marks practical 15 marks)

Total Marks: 100
Total Weeks: 20
Contact Hours Per Week: 06
Total Contact Hours: 120

Chapter-1 (Measurements) 2 Week

i- Introduction to Physics
ii- Physical Quantities
iii- International system of Units
Base Units, Supplementary Units, Derived Units, Scientific, Notation, Conventions for Indication units
iv- Significant figures
v- Dimensions of Physical quantities
Checking the homogeneity of physical equation. Deriving a possible formula

Chapter-2 (Vectors and Equilibrium) 4 W

vii- Basic Concepts of Vector.
Vector, Rectangular Coordinate system. Addition of vectors. Resultant vectors. Vectors subtraction. Multiplication of a vectors by a scalar. Unit vectors. Null vectors. Equal vectors. Rectangular components of a vectors. Determination of a vectors form its rectangular components. Position vectors.
viii- Vector addition by rectangular components
ix- Product of two vectors.
Scalar or dot product. Vectors or cross product.
x- Torque
xi- Equilibrium of forces.
First condition of equilibrium
xii- Equilibrium of torques.
Second condition of equilibrium

Chapter-3 (Motion and Force) 2 W

xi- Displacement.
xii- Velocity
xiii- Acceleration
xiv- Velocity-time graph
xv- Review of equation of uniformly accelerated motion
xvi- Newton's laws of motion
xvii- Momentum.
Momentum and newton's second law of motion. Impulse. Law of conservation of momentum

Chapter-4 (Work and Energy) 2 W

xi- Work done by a constant force.
xii- Power.
Power and Velocity
xiii- Energy
Work-energy principle. Absolute potential energy. Escape velocity
xiv- Interconversion of potential energy and kinetic energy
xv- Conservation of energy

Chapter-5 (Circular Motion) **2 W**

iv- Angular displacement
v- Angular velocity
vi- Angular acceleration
vii- Relation between angular and linear velocities
viii- Centripetal force
ix- Moment of inertia

Chapter-6 (Oscillations) **3 W**

viii- Simple harmonic motion
Instantaneous displacement and amplitude of vibration. Vibration. Time period. Frequency. Angular frequency
ix- SHM and uniform circular motion
Displacement, Instantaneous Velocity, Acceleration in terms of Ш
x- A horizontal mass spring system
xi- Simple pendulum
xii- Energy conservation in SHM
xiii- Resonance

Chapter-7 (Waves) **2 W**

i- Progressive waves
Transverse and longitudinal waves
ii- Periodic waves
Transverse periodic waves. Longitudinal periodic waves
iii- Interference
iv- Beats
v- Doppler effect
Application of doppler effect

Chapter-8 (Optical Instruments) **3 W**

iv- Least distance of distinct vision
v- Magnifying power and resolving power of optical instruments
vi- Simple microscope
vii- Spectrometer
viii- Introduction of fiber optics
ix- Fiber optic principles
x- Types of optical fibers

LIST OF EXPERIMENT IN PHYSICS FOR CLASS XI (PART-III)

1. To find the volume of cylinder using vernier caliper.
2. To find the area of cross section of a wire or volume of small sphere using microcenter screw gauge.
3. To find the unknown weight of a body by the method of vector addition of forces.
4. Determination of value of ‘g’ by free fall using and electronic timer / ticker timer.
5. Verification of following relations of the simple pendulum;
   i- Time period is independent of the amplitude.
   ii- Time period is independent of its mass or density of the bob.
   iii- Time period is directly proportional to the square toot of its length.

6. To find the acceleration due to gravity by oscillating mass-spring system.
7. Verify the second condition of equilibrium using a suspended meter rod.
8. To find the moment of inertia of a fly-wheel.
9. To determine the focal length of a convex lens by displacement method.
10. To determine the focal length of concave lens using:
    i- Concave mirror ii- convex lens
11. To find the refractive index of the material of prism, using laser or spectrometer.
12. To find the refractive index of the material of a prism be critical angle method.

Recommended Books: "Physics Part-I"
Authors:

1. Prof. Dr. Ijaz Mujtaba Ghauri
2. Prof. Dr. Mrs. Fouzia Saleemi
3. Prof. Dr. M. Zakaria Butt
4. Prof. Muhammad Ali Shahid
5. Prof. Muhammad Nisar
6. Prof. Dr. Khadim Hussain
7. Prof. Jawaid Tariq
8. Prof. Fayyaz Mahmood
9. Prof. Miss Surriya Usmani
10. Mr. Amer Riaz

Published By: JanBook Depot, Lahore(Punjab Textbook Board Lahore)

ENGLISH-II
Part-IV

Total Marks: 100
Total Weeks: 20
Contact Hours Per Week: 06
Total Contact Hours: 120

Sr. No.	Unit No.	Description / Main Topics	Allotted week(s)
1.	Book-II Lesson-2	Using the Scientific Method	2 weeks
2.	Book-II Lesson-3	Why Boys Fail in College	2 weeks
3.	Book-II Lesson-8	China's Way to Progress	2 weeks
4.	Book-II Lesson-9	Hunger and Population Explosion	2 weeks
5.	Book-II Lesson-13	Sir Alexander Fleming	2 weeks
6.	Book-II Lesson-14	Louis Pasteur	2 weeks
7.	Grammar & Composition 11-12 Punjab Curriculum and Textbook Board, Lahore	EssayWriting 21.1-21.13 (Page No. 122-132)	2 weeks
8.	Grammar & Composition 11-12 Punjab Curriculum and Textbook Board, Lahore	Correction of Common Errors 11.1-11.8(Page No. 31-33)	2 weeks
9.	Grammar & Composition 11-12 Punjab Curriculum and Textbook Board, Lahore	Idioms 15(Page No. 62-67)	2 weeks
10.	Grammar & Composition 11-12 Punjab Curriculum and Textbook Board, Lahore	Translation from Urdu into English 19.1-19.4 (Page No. 102-109) Exercise (Translation from Urdu into English) 11.1	2 weeks

Course of Studies: Intermediate English Book-II

English Grammar & Composition 11-12
(Punjab Curriculum and Textbook Board, Lahore)

Urdu-II

(Part-IV)

Total Theory Marks: 100
Total Weeks: 20
Contact Hours per Week: 06
Total Contact Hours: 120

نمبر شمار	بنیادی موضوع	عنوانات	دورانیہ
		حصہ نثر	
۱	**مضامین**	مناقب عمر بن عبدالعزیز از شبلی نعمانی	تین ہفتے
۲		تشکیل پاکستان از میاں بشیر احمد	
۳		مواصلات کے جدید ذرائع از ڈاکٹر حفیظ الرحمٰن	
۴	ڈراما	دستک از مرزا ادیب	تین ہفتے
۵	ناول	پہلی فتح از نسیم حجازی	
۶	ناول	اکبر کی حماقتیں از مولوی نذیر احمد	
۷	سفرنامہ	ہوائی از بیگم اختر ریاض الدین	
۸	شخصیت نگاری	نواب محسن الملک از مولوی عبدالحق	تین ہفتے
۹		مولانا ظفر علی خان از چراغ حسن حسرت	
۱۰		مولوی نذیر احمد از شاہد احمد دہلوی	
		حصہ نظم	
۱۱		اسلامی مساوات از مولانا الطاف حسین حالی	ایک ہفتہ
۱۲		سراغِ راہ رو از جوش ملیح آبادی	ایک ہفتہ
۱۳		نوجوان سے خطاب از اسرار الحق مجاز	
۱۴		آدمی از سیّد ضمیر جعفری	ایک ہفتہ
۱۵		تغیر از احسان دانش	
۱۶		قطعات از انور مسعود	ایک ہفتہ
		حصہ غزل	
۱۷		مرزا غالب۔ بسکہ دشوار ہے ہر کام کا آساں ہونا	ایک ہفتہ
۱۸		علامہ اقبال۔ جب عشق سکھاتا ہے آدابِ خود آگاہی	
۱۹		ناصر کاظمی۔ دل میں اک لہر سی اٹھی ہے ابھی	ایک ہفتہ
۲۰		ناصر کاظمی۔ اے ہم سخن وفا کا تقاضا ہے اب یہی	
۲۱		فراق گورکھپوری۔ اداسی، بے دلی۔ آشفتہ حالی میں کمی کب تھی	ایک ہفتہ
۲۲		تابش دہلوی۔ سکوں درکار ہے لیکن سکوں حاصل نہیں ہوتا	

		قواعدوانشا	
۲۳		**مضمون نویسی** کسی بھی علمی ادبی موضوع پر استدلال، مثالوں، اشعار، محاورات کے مطابق سرحاصل مضمون لکھنا	دو ہفتے
۲۴		**خطوط نویسی** خطوط کے اجزاء۔اقسام اور تفصیل وطریقہ کار	ایک ہفتہ
۲۵		آب بیتی	تین دن
۲۶	قواعد	حروف کی اقسام اور جملوں میں استعمال	تین دن

سرمایہ اردو (بارھویں جماعت)

مولفین: ڈاکٹر علی محمد خان ،ڈاکٹر عبدالغنی فاروق، پروفیسر جعفر بلوچ

ایڈیٹرز: پروفیسر محمد ظفر الحق چشتی

ناشر: پنجاب ٹیکسٹ بک بورڈ، لاہور

Pakistan Studies (compulsory)
(Part-IV)

Total theory Marks: **50**
Total weeks: **20**
Contact hours per week: **03**
Total Contact Hours: **60**

Chapter 1. Islam and Pakistan 04 weeks

5. Islam as the ideological Base of Pakistan
6. The Sunnah of Hazrat Muhammad (PBUH)
7. Basic principles of Islam
8. Definition and Functions of an Islamic welfare state.
9. Pakistan as a modern Islamic state delineated by Quaid-e-Azam Muhammad Ali Jinnah, Allama Muhammad Iqbal, Liaqat Ali Khan and objectives resolution.
10. Objectives resolution.
11. Promotion of peace, Tolerance and Co-Existence in Islam.

Chapter 2. Political and Constitutional Development 04 weeks

4. Progress and problems of democracy in Pakistan
5. Role of political parties in promoting of democracy in Pakistan.
6. Salient features of the constitution of 1962
7. Reasons and impacts of separation of East Pakistan.
8. Federal structure under the constitution of 1973.
9. Structure of provincial governments.
10. Fundamental rights under the constitution of 1973.
11. Islamic provisions under the constitution of 1973.

Chapter 3. Administrative System 04 weeks

3. Functions of Federation and Provinces in the light of the Constitution of 1973.
4. Difference between Function of Central and Provincial Governments.
5. Administrative Structure and Functions of Azad Jammu and Kashmir and Gilgit Baltistan.
6. Nature of the Relationship between the Federal and Provincial Governments.
7. Structure of Different Levels of Local Government
8. Rural Areas
9. Urban Areas
10. Functions of the Metropolitan / Municipal Corporation.

Chapter 4. Human Rights 04 weeks

4. Concept of Human Rights
5. Islamic Concept of Human Rights
6. Citizen's Rights in Islam
7. United Nations Universal Declaration of Human Rights.
8. Comparison of the Rights Granted under the Constitution of Pakistan and the Human Rights of the United Nations.
9. Human Rights at National and international Level.

Chapter 5. Education System of Pakistan 04 weeks

3. Concept of Education
4. Goals of Education System of Pakistan
5. Main Features of Education System of Pakistan
   (Primary, Elementary, Secondary, Higher Secondary and Professional Education)
6. Professional, Technical and Vocational Education in Pakistan
7. Challenges of Education in Pakistan
8. Suggestions for Resolving Educational Problems.

Prescribed Book: Pakistan Studies (Urdu & English Version)

Authors:

1. **Prof.(R) Dr. Sultan Khan**
2. **Prof. Dr. Nouman Aftab Dar**
3. **Prof. Dr. Amir Ali**
4. **Prof. Rana Muhammad Asghar Meo**

Published by: Eagle Book Centre, Mandi Bahauddin

Printed by: Qudrat Ullah Printers, Lahore

MATHEMATICS-II
Part-IV

Total Marks: 100
Total Weeks: 20
Contact Hours Per Week: 06
Total Contact Hours: 120

UNIT-I (Function and Limits) 15 H

i- Introduction

Concept of Function, Definition (Function-Domain-Range), Notation and Value of Function, Graphs of Algebraic Functions, Graph of Functions Defined Piece-wise

ii- Types of Functions

Algebraic Functions, Trigonometric Function, Inverse Trigonometric Functions, Exponential Function, Logarithmic Function, Hyperbolic Functions, Inverse Hyperbolic Functions, Explicit Functions, Implicit Functions, Even Functions, Odd Functions

iii- Limit of a Function and theorems on limits

Meaning of the Phrase "x approaches zero", Meaning of the Phrase "x approaches infinity", Meaning of the Phrase "x approaches a", Concept of limit of function, limit of a Function, Theorems on limits of Function

iv- Limits of Important Function

$Lim\frac{x^n-a^n}{x-a} = na^{n-1}$, Where n is an integer an a >o

$\text{Lim} = \frac{\sqrt{\text{x+a}} - \sqrt{\text{a}}}{\text{x}} = \frac{1}{2\sqrt{\text{a}}}$, Limit at Infinity, Method for Evaluating the limits at infinity, $Lim\left[1+\frac{1}{\text{n}}\right] = e, Lim\frac{a-1}{\text{x}} = log, a$, the Sandwith Theorem, if 0 is measured is radian, then $Lim\frac{sin0}{0} = 1$

v- Continues and Discontinuous Functions

One-sided Limits, Criterion for Existence of limit of a Function, Community of a function at number

UNIT-II(Differentiation) 18 H

i- Introduction

Average Rate of Change, Derivative of a Function

ii- Finding f(x) from definition of derivative

Derivation of x^n where n € Z, Differentiation of Expressions of the types

iii- Theorems of Differentiation

iv- The chain rules

v- Derivatives of inverse functions

vi- Derivative of a Function given in the form of parametric equations

vii- Differentiation of Implicit Relations

viii- Derivatives of Trigonometric Functions

ix- Derivatives of inverse Trigonometric Functions

x- Derivative of exponential functions

xi- Derivative of the logarithmic function

xii- logarithmic differentiation

UNIT-III (Integration) 18 H

i- Introduction
Differentials of Variables, Distinguishing between dy and Sy

ii- Finding $\frac{dy}{dx}$ by using differentials, Simple application of differentials

iii- Integration as anti-derivative (inverse of derivative)
Some standard formulae for Anti-Derivatives, theorems on Anti-Derivative, Anti-Derivativeof $[f(x)]^n\ f(x) and [f(x)]^{-1}\ \ f(x)$

iv- Integration by method of substitution

v- Some useful substitutions

vi- Integration by parts

vii- Integration involving partial fractions

viii- The definite integrals
The area under the curve, Fundamental theorem and properties of definite integrals

ix- Application of definite integrals

x- Differential equations
Solution of a differential equation of first order, initial conditions

UNIT-IV (Introduction to Analytic Geometry) 18 H

i- Introduction
The distance formula, Point dividing the join of two points in a given ratio

ii- Equations of straight lines
Slope or gradient of a straight line joining two points, Equation of a straight line parallel to the x-axis (or perpendicular to the y-axis). Equation of a straight line parallel to y-axis (or perpendicular to the x-axis). Derivation of standard forms of equations of straight lines. Alinear equation in two variables represents a straight line., to transform the general linear equation to standard forms. Position of a point with respect to a line

iii- Two and three straight lines.
The point of intersection of two straight lines, condition of concurrency of three straight lines. Equation of lines through the point of intersection of two lines. Distance of a point from a line. Distance between two parallel lines. Area of triangular region whose vertices are given.

iv- Angle between two lines.
Equation of a straight line in matrix form

UNIT-V (Linear Inequalities and Linear Programming) 18 H

i- Introduction

ii- Linear inequalities
Graphing of linear inequality in two variables

iii- Region bounded by 2 or 3 simultaneous inequalities

iv- Problem Constraints

v- Feasible solution set

vi- Linear Programming

vii- Linear Programming Problems

UNIT-VI (Conic Section) 18 H

i- Introduction
equation of a Circle, general form of an equation of circle, equation of circles determined by given conditions

ii- Tangents and Normals
Length of the tangent to a circle (tangential Distance)

iii- Parabola
General form of an equation of parabola. Other standard parabolas. Graph of the parabola

iv- Ellipse and its elements
Standard form of and ellipse graph of an ellipse

v- Hyperbola and its elements
Standard equation of Hyperbola. Graph of the hyperbola

UNIT-VI (Vectors) 15 H

i- Introduction
Geometric interpretation of vector, Multiplication of vector by a scalar, Addition and subtraction of two vectors. Position vector. Vectors in plane. Properties of magnitude of a vector. Another notation for representing vector in plane. A unit vector in the direction of another given vector. The ratio formula. Vector geometry.

ii- Introduction of Vector in Space.
Concept of a vector in space. Properties of vectors. Another notation for representing vectors in space. Distance between two points in space. Direction angles and direction cosines of a vector.

iii- The scalar product of two vectors.
Deduction of the important results. Perpendicular (orthogonal) vectors. Properties of dot product. Analytical expression of dot product $\underline{u}$. $\underline{v}$. angle between two vectors. Projection of one vector upon another vector.

iv- The cross product or vector product of two vectors.
Derivation of useful results of cross products. Properties of cross product. Analytical expression of $\underline{u} \times \underline{v}$ .Parallel victors. Area of parallelogram. Area of triangle.

v- Scalar triple product of vectors.
Analytical expression of u (v x w). the volume of the parallelepiped. The volume of the tetrahedron. Application of vectors in physics and engineering.

Recommended Books: "Mathematics Part-II"

Authors: Prof. Muhammad Amin Chaudhary
Prof. Muhammad Sharif Ghauri
Prof. Muhammad Khalid Saleem
Mr. Mazhar Hayat

Published By: Ch. Ghulam Rasul & sons, Lahore for Punjab Textbook Board Lahore

ECONOMICS-II
(Part-IV)

Total Theory Marks: 100
Total Weeks: 20
Contact Hours per Week: 06
Total Contact Hours: 120

Chapter-I National Income

Concepts	Contents 2 weeks
1. National Income 2. When saving is equal to investment 3. How of national income 4. Per capita income	**1.** G.N.P, N.N.P, G.D.P, National Income 2. Methods of computing national income i. Product method ii. Income methods iii. Expenditure methods. Iv. Circular flow diagram. v. Concept of equilibrium: MPC, MPS. Y=C+S Y=C+1 vi. Income where S+1

Chapter-II Money

Concepts	Contents 2 weeks
1. Barter system 2. Money 3. Value of Money 4. Credit cards	1. Barter system and its difficulties 2. Evolution of money 3. Definition of money 4. Functions of money 5. Kinds of money 6. Instruments of money(credit cards ATM, Traveler Cheques) 7. Demand for and supply of money 8. Value of money 9. Quantity theory of money (Fisher's equation)

Chapter-III Banks

Concepts	Contents 01 weeks
1. Bank 2. Commercial Bank 3. Interest	1. Definition of Bank 2. Kinds and functions of Banks 3. Commercial Books and their functions with particular reference to credit creation 4. Definition of interest 5. Interest free Banking in Pakistan 6. Case study of Malaysia, Kingdom of Saudi Arabia

Chapter-IV International Trade

Concepts	Contents 03 weeks
1. Foreign trade 2. Domestic trade 3. Balance of payment 4. Balance of trade 5. Meaning and improving role 6. Globalization	1. Differentiation between domestic and foreign trade. 2. Advantage and disadvantages of international trade. 3. Classical theory of international trade 4. Balance of trade vs. Balance of payment 5. Globalization MNCs. TNCs. WTO

Chapter-V National Income of Pakistan

Concepts	Contents 2 weeks
National income GNP, GDP, NNP Product, personal Income Disposable Total Income	1. Its size and sectoral contribution 2. Difficulties in measurement 3. Causes of low per capita income 4. Tax Culture

Chapter-VI Public Finance of Pakistan

Concepts	Contents 2 weeks
1. Public Finance 2. Revenue 3. Zakat 4. Ushr 5. Charity	1. Kinds of taxation in Pakistan 2. Source of revenue 3. Heads of expenditure of Federal and provincial Government with reference to latest budget. 4. Zakat and its distribution 5. Ushr and charity as instruments of source of revenue and social Justice.

Chapter-VII Foreign trade of Pakistan

Concepts	Contents 5 weeks
1. Export 2. Import 3. Regional Organization 4. International Organization 5. Balance of payment 6. Foreign exchange rates	1. Major exports of Pakistan 2. Major imports of Pakistan 3. Balance of payments position of Pakistan 4. Regional and international organization their role towards Pakistan e.g. ECO, SAARC, WTO. 5. Foreign exchange rates.

Chapter-VIII Economic System of Islam

Concepts	Contents 3 weeks
1. Islamic Economic system 2. Different economic system	1. Elaboration of basic characteristic and instruments of Islamic 2. Economic system 3. Interest free Banking 4. Equality 5. Justice (Social and Economies) 6. Goodness and Ehsan. 7. Elimination of wealth concentration and wasteful consumption. 8. Austerity / self contentment implication of ostentation and hoarding 9. Comparison between capitalism socialism and Islamic system.

Recommended Book: Economics Part-II
Authors:1 Mian Muhammad Akram. 2) Mahmood Ahmad Ch.
Editors: 1) Rubina Qamar Qureshi

Publisher: Imtiaz Book Depot, Lahore.

STATISTICS-II
Part-IV

Total Theory Marks: 100
Total Weeks: 20
Contact Hours per Week: 06
Total Contact Hours: 120

Chapter No / Module	Main Topics & Sub Topic	Allotted Weeks
1. Simple Liner Regression and Correlation	1.1 Simple Linear Regression i. Define Simple Regression ii. Define Dependent and independent variables iii. Define scatter diagram iv. Describe the least square principle v. Estimate the regression line using the method of least square and interpret the regression coefficient. 1.2 Simple Correlation i. Define simple Correlation between two random variables. ii. Describe: • Positive correlation • Negative correlation • No correlation iii. Define pearson product moment correlation coefficient. iv. Calculate pearson product moment correlation coefficient for two variables.	**03 weeks**
2. Time Series	2.1 Time Series i. Define Time Series ii. Define and construct historigram iii. Describe the components of time series. • Secular Trend • Seasonal Trend • Cyclical Trend • Irregular Trend 2.2 Measurement of secular trend i. Describe and apply the method of free hand curve to measure the secular trend. ii. Describe and apply the method of semi average to measure secular trend. iii. Describe and apply the method of moving averages to measure the secular trend.	**03 weeks**

3. Special Continuous Probability Distribution.	3.1 Continuous Uniform Distribution i. Define the following • A continuous uniform probability distribution. • A continuous uniform probability density function. ii. Find the mean, variance and standard deviation of continuous uniform probability distribution. iii. Solve real life problems using continuous uniform probability distribution. 3.2 Normal Distribution i. Define the following: • A normal probability distribution • A normal probability density function. • A standard normal distribution ii. Describe the properties of normal probability distribution. iii. Find the probabilities for a standard normal random variable. iv. Solve real life problems using normal probability distribution.	**02 weeks**
4. Sampling and Sampling Distribution	4.1 Survey Sampling i. Define: • Sampling, Sampling units • Sampling frame • Sampling Design ii. Differentiate between: • Finite and infinite populations. • Sample survey and complete enumeration iii. Describe advantages and disadvantages of sampling. iv. Differentiate between: • Probability and non-probability sampling • Random sampling with and without replacement. v. Differentiate between sampling and non-sampling errors. vi. Describe the sampling techniques: • Simple random sampling • Stratified random sampling • Systematic random sampling 4.2 Sampling Distribution of sample mean. i. Define: • Sampling distribution of sample mean • Standard error of sample mean. ii. Construct the sampling distribution of sample mean. 4.3 Sampling distribution of sample proportion i. Define sampling distribution of sample proportion. ii. Describe the properties of sampling distribution of sample proportion. iii. Construct the sampling distribution of sample proportion.	**03 weeks**

5.Estimation	5.1 Introduction i. Define: • Estimation of parameter • Point estimation of a parameter • Point estimator • Point estimate ii. Differentiate between point estimator and point estimate. 5.2 Point Estimation i. Define: • Unbiasedness • Unbiased estimator • Biased estimator • Bias ii. Describe and verify the unbiasedness of: • Population mean • Population proportion iii. Define Efficiency iv. Explain best estimator 5.3 Interval Estimation i. Define • Interval estimation of a parameter • Conference coefficient • Interval estimate ii. Explain and estimate the confidence interval for: • The mean of a normal population • The population proportion	**02 weeks**
6. Hypothesis Testing	6.1 Introduction i. Describe statistical hypothesis and hypothesis testing. ii. Differentiate between: • Null and alternative hypothesis • Simple and composite hypothesis iii. Formulate null and alternative hypothesis iv. Describe the element involved in hypothesis testing: • Test statistics • Rejection and non-rejection regions • Critical value (s) • One tailed and two tailed tests • Type – 1 and type-II errors. • Significance level • Conclusion 6.2 Hypothesis Testing i. Apply the test of hypothesis about: • The mean of a normal population (know / unknown std deviation) • The population proportion (Large sample)	**02 weeks**

7. **Association of Attributes**	7.1 Attribute i. Recall variable and attribute ii. Describe class and class frequency iii. Recognition categorical data of two attributes iv. Explain independence of two attributes v. Discuss the association of two attribute • Positive association • Negative association • Complete association • Complete disassociation vi. Define coefficient of association 7.2 Contingency Table i. Define a contingency table. ii. Know the criterion of independence of two attributes in a contingency table. iii. Test whether two attributes in a given contingency table, are statistically independent or not.	**02 weeks**

Recommended Book: Statistics (Part-II)

Author: Prof. Muhammad Rauf Chaudhary
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Editors: 1) Prof. M. Khalid Director (Technical)
2) Mr. Mazhar Hayat, Subject Specialist

Punisher: Zeeshan Book Center, Lahore, for Punjab Textbook Board, Lahore.

Tarjuma Tul Quran
Part-IV

Total Theory Marks: 50
Total Weeks: 20
Contact Hours Per Week: 03
Total Contact Hours: 60

نمبر شمار	سورۃ		عنوانات	ہفتے اور ہفتہ وار کلاسیں
۱	سورۃ النساء	i	رکوع نمبر 01 تا 04 متن ترجمہ آیات 01 تا 25	04 ہفتے 12 کلاسیں
		ii	رکوع نمبر 07 تا 09 متن ترجمہ آیات 43 تا 70	
		iii	رکوع نمبر 22 تا 24 متن ترجمہ آیات 153 تا 176	
2	سورۃ المائدۃ	i	رکوع نمبر 01 تا 02 متن ترجمہ آیات 01 تا 11	03 ہفتے 09 کلاسیں
		ii	رکوع نمبر 06 تا 07 متن ترجمہ آیات 35 تا 50	
		iii	رکوع نمبر 12 تا 13 متن ترجمہ آیات 87 تا 100	
3	سورۃ النور	i	رکوع نمبر 01 تا 04 متن ترجمہ آیات 01 تا 34	02 ہفتے 06 کلاسیں
4	سورۃ الاحزاب	i	رکوع نمبر 01 تا 02 متن ترجمہ آیات 01 تا 18	03 ہفتے 09 کلاسیں
		ii	رکوع نمبر 06 تا 09 متن ترجمہ آیات 41 تا 72	
5	سورۃ محمد	i	رکوع نمبر 01 تا 02 متن ترجمہ آیات 01 تا 19	3 ہفتے 09 کلاسیں
6	سورۃ الفتح	i	رکوع نمبر 03 تا 04 متن ترجمہ آیات 18 تا 29	
7	سورۃ الحجرات	i	رکوع نمبر 01 تا 02، متن ترجمہ آیات 01 تا 18	
8	سورۃ الحدید	i	رکوع نمبر 01، متن ترجمہ آیات 01 تا 10	
9	سورۃ المجادلۃ	i	رکوع نمبر 01 ، متن ترجمہ آیات 01 تا 06	
10	سورۃ الحشر	i	رکوع نمبر 03، متن ترجمہ آیات 18 تا 24	3 ہفتے 09 کلاسیں
11	سورۃ الممتحنہ	i	رکوع نمبر 02، متن ترجمہ آیات 07 تا 13	
12	سورۃ الصف	i	رکوع نمبر 02، متن ترجمہ آیات 10 تا 14	
13	سورۃ الطلاق	i	رکوع نمبر 01 تا 02، متن ترجمہ آیات 01 تا 13	
14	سورۃ التحریم	i	رکوع نمبر 02 متن ترجمہ آیات 08 تا 12	
15			مشقی سوالات	01 ہفتہ 03 کلاسیں
16			امتحانات کی تیاری و دہرائی	ایک ہفتہ 03 کلاسیں

Reference Book: Tarjuma Tul Quran
(Punjab Curriculum and Textbook Board, Lahore)

PHYSICS-II
(PART-IV)

(Theory 85 marks practical 15 marks)

Total Marks:	100
Total Weeks:	20
Contact Hours Per Week:	06
Total Contact Hours:	120

Chapter-1 (Electrostatics) **4 W**

i- Coulomb's law
ii- Electric flux
iii- Electric flux through surface enclosing a charge
iv- Gauss's law
v- Applications of Gauss's law
vi- Electric potential
vii- Electron volt
viii- Capacitor
ix- Capacitance of a parallel plate capacitor

Chapter-2 (Current Electricity) **3 W**

i. Electric current
ii. Source of current
iii. Effects of current
iv. Ohm's law
v. Resistivity and its dependence upon temperature
vi. Electrical power and power dissipation in resistors
vii. Electromotive force (EMF) and potential difference

Chapter-3 (Electromagnetism) **1 W**

i. Toque on current carrying coil
ii. Galvanometer
iii. Avo meter-Multimeter

Chapter-4 (Alternating Current) **4 W**

I. Alternating current
II. A.C Circuits
III. A.C through a resistor
IV. A.C through a capacitor
V. A.C through an inductor
VI. Impedance
VII. R-C and R-L series circuits
VIII. Series resonance circuits
IX. Parallel resonance circuits
X. Electromagnetic waves

Chapter-5 (Electronics) **3 W**

i. Brief review of P-N junction and its characteristics
ii. Rectification
iii. Specially designed P-N junctions
iv. Transistors
v. Transistor as an amplifier
vi. Fundamental logic gates
vii. Other logic gates
viii. Application of gates in control systems

Chapter-6 (Dawn of Modern Physics) **2 W**

i. Relative motion
ii. Inertial frame of reference
iii. Special theory of relativity

Chapter-7 (Nuclear Physics) **3 W**

i. Atomic nucleus
ii. Isotopes
iii. Radioactivity
iv. Half life
v. Nuclear reactions
vi. Nuclear fission
vii. Fusion reaction

LIST OF EXPERIMENT IN PHYSICS FOR CLASS XII (PART-IV)

1. To find the resistance of a voltmeter by drawing graph between R and I V.
2. Variation of resistance of thermister with temperature.
3. Conversion of galvanometer into ammeter.
4. Conversion of galvanometer into voltmeter.
5. Relation between current passing through a tungsten filament lamp and the potential apphed across it.
6. Characteristics of semi-conductor diode and calculation of forward and reverse current resistance.
7. Study of the variation of electric current with intensity of light using a photo cell.
8. To verify truth table for logic gates.
9. To make burglar alarm using NAND gate.
10. To make a fire alarm using NOT gate.