

## **DIPLOMA IN COMPUTER APPLICATION**

1. The diploma run by the Kumaun University Computer Science Deptt. will be called PG Diploma in Computer Applications. The diploma course will be of one year duration and will commence with Academic year.
2. A candidate who after passing 3 years BA/B.Sc./B.Com. examination at least 45% marks of an Indian University incorporated by law and recognized by the Kumaun University as equivalent thereto, shall be eligible for admission in the diploma course.
3. The University organize a entrance test in the month of July every year for admission in diploma course. The admission will be given on the basis of merit.
4. 50% total seats shall be reserved for the students of Kumaun University, if the eligible candidates on the basis of merit list are not available for admission, the seats so reserved for the shall be filled by General candidates. 10% additional seats will be available for the Employees of Kumaun University, their wife, son, daughter on the basis of merit. If the Employees & their ward is eligible to get admission on the basis of merit, he will not be treated in the 10 additional seats.
5. The diploma course will have only two divisions second and first. Candidates shall have to secure at least 50% marks to pass the diploma course. Those who secure 60% and above will be placed in first division.
6. The examination shall be conducted by means of theory papers and shall include practical Examination carrying 100 total marks and project report carrying 100 total marks.
7. The examination shall be conducted by means of theory papers and shall include practical examination. The candidate shall have to secure minimum 50% marks separately in theory and practical.

The diploma course is a professional course. Every student shall have to complete 90% attendance in each session falling which, he cannot be allowed to appear in the examination. In any special circumstances, the Vice-Chancellor can relax upto 10% attendance.

Every candidate shall have to submit to separate application in prescribed form with prescribed Examination fee to appear in the examinations.

The University takes no responsibility of job provision after passing the diploma.

## **Syllabus P.G.D.C.A.**

### **Theory Papers**

**(100 Marks each)**

1. Introduction to Digital Computer System
2. Introduction to programming with language C
3. Computer Network and Communication System
4. Object Oriented Programming in C++
5. Internet Fundamental/HTML Tools
6. Multimedia and Office Applications
8. Database Management System with MS Access
9. Visual Basic

### **Practicals**

**(100 Marks)**

1. Office and windows environment (20)
2. C/C++ (20)
3. HTML, Java Script (20)
4. Visual Basic (20)
5. Practical Assignment and Lab performance (20)

### **Project Work**

**(100 marks)**

A minor project and Viva voice

## 1. Introduction to Digital Computer System

*Paper contains ten questions, out of which five are to be attempted.*

**Computer Hardware :** Configuration, Parts of Computer System, Evolution computers, Generation of computers, types of computers (Micro computers, Mini computers, Mainframe computers, Super computers), Digital system, analog system, Memory, Registers, Secondary Storage, Peripheral Devices, I/O devices., Computer instructions.

**Computer Software :** Types of Software, System Software, Application Software.

**Computer Language :** Machine Language , Assembly Language, Compiler, Interpreter, High Level Languages, Codes: ASCII, EBCDIC, BCD.

**Number System :** Concept of Number System, Binary, Octal Hexadecimal, Decimal number system, fixed and floating point representation.

**Boolean Algebra :** Postulates, basic theorems, logic gates, half-adder, full adder.

## 2. Introduction to Programming with Language C

*Paper contains ten questions, out of which five are to be attempted.*

**Introduction to Programming :** Introduction to algorithms & Flowcharts Variables, constant, Keywords, signed and unsigned modifiers.

**Expressions & Operators :** Arithmetic, logical and relational operators, bitwise operators, incremental operators, assignment operators. Functioning of these operators.

**Control Flow :** If-else, switch, while, do-while, for loops, continue, break statements, Nesting of control statements and loops.

**Working with Functions :** Variable and functions, Argument passing to functions, type of functions.

**Pointers & Arrays :** Pointers, addresses, arrays, Input/Output, Standard input and output.

### 3. Computer Network and Communication Systems

*Paper contains ten questions, out of which five are to be attempted.*

**Computer Communication Fundamentals :** Computer Communication, Analog and Digital Transmission Lines, Modulation-Demodulation, Modes of Communication(Simplex, Half-duplex, duplex), Types of Data Transfer, Switching, Multiplexing.

**Network Topology :** Network Structure, Layered architecture, OSI model of ISO, Types of Networks, Network Topologies(Mesh, Star, Tree, Bus, Hybrid), Elementary functions and protocols used in different layers of OSI.

**Network Architecture & Applications :** Local Area Network, TCP/IP, X.25 Protocol, WAN Accessing Techniques, Network Services, Network Security.

### 4. Object Oriented Programming in C++

*Paper contains ten questions, out of which five are to be attempted.*

**Introduction to Object Oriented Programming :** Procedural Vs. object oriented programming, the main ( )function, C++ comments, C++ processor and the <iostream.h>file, C++ input and output with in cin, cout.

**C++ built in data types**

**Integer Types :** Short, int, unsigned long and char, floating points types: float double and long double, C++ arithmetic operators, operators precedence, type casting, const modifier.

**Loop & Branching Statements :** Relational expression in C++, relation operators, for loop, while loop, do while loop, if else statements, logical operators, conditional operators: switch statement, break and continue statements.

**C++ Built in Derived Data Types :** Arrays, strings, structure, pointers, reference variable.

**Function :** Defining a function, function prototyping and function calls, function arguments: passing by reference, inline function default arguments, function and polymorphism (function overloading).

**Object & Classes :** Defining classes, class constructors and destructors, this pointer, friends: Designing and using friends, operator overloading, dynamic memory and classes.

**Classes Inheritance :** Base classes, Derived classes: Defining implementing and using derived class, Virtual function, Multiple Inheritance, Virtual base classes.

## 5. Internet Fundamentals / HTML Tools

*Paper contains ten questions, out of which five are to be attempted.*

**Introduction :** History of Internet, Growth of Internet, World Wide Web, Protocols Governing the Web, Web Applications.

**Internet Fundamentals :** Hardware and Software Requirements of Internet, ISP and Internet Accounts, Internet Connectivity Methods, URL, Web Server and Client, Search Engines, E-Mail, Internet Relay Chat, HTTP, FTP.

**Web site Planning & Publishing :** Web site Planning, Web Hosting, server space requirement, Web site publishing, Home Page, Web site Organization, Site Map.

**Web Development Tools : HTML :** Creating a web page, Formatting tags, Page Designing Tags, Header Tags, Listing, Image-map, Frames, Tables, Forms; CSS: Cascade Style Sheet, Inline, Style Sheet, Embedding Style Sheet into HTML page, Linking External CSS file with HTML page.

## 6. Multimedia and MS-Office Applications

*Paper contains ten questions, out of which five are to be attempted.*

Introduction to multimedia, uses of multimedia, components of multimedia (Images, Bitmap images, Animations, Digital Audio, Video) Categories of Multimedia, Examples of multimedia (Encarta, Cinemania, Scenes) multimedia requirements(hardware and software) Use of sounds in multimedia, Types of sound files, sound applications Multimedia platforms, DVI technologies, DVI applications, Virtual reality, Applications using Virtual realities, Multimedia devices, Presentation devices and user interfaces, Brief survey of speech recognition and generations use of packaging and design of application, Multimedia in business, Multimedia developing tools, Feature of authoring software ( Integrating Multimedia elements, Script language programme, icon based programmes, DLL for extending feature).

Authoring tools (Authware, Everest Authoring systems, image - Q Macromedia director).

MS Word, MS Excel, MS PowerPoint.

## 7. Database Management System with MS-Access

*Paper contains ten questions, out of which five are to be attempted.*

Introduction to database management system and databases, Evolution of databases, Databases models. Relational Database Management System, Features and responsibilities of RDBMS, Users of RDBMS, MS Access-an RDBMS, Designing of databases, steps in designing a table, creating and modifying the table. Adding, deleting, updating the records, working with constraints (Primary key, Foreign key, Unique key, default key, Check key) creating the relationship between the table need for queries :- Creating the simple query and multi table query, joins, uses of aggregate function, sub query in access, parameter query. Crosstab query, delete query, update query, append query.

**Maintaining the Database :** Need of security, Speeding up tables in a databases, compacting the databases, backing up a databases, Importing and linking the database.

## 8. Visual Basic

*Paper contains ten questions, out of which five are to be attempted.*

**Integrated Development Environment :** The form designer, Edit, View, Run, Debug, Options, using the application wizard, concept of VB project, elements of user interface, programming an application, visual development and event driven programming customizing the environment.

**Introduction to Visual Basic Languages :** Variables, user defined data types, constants, arrays, collections, procedures, subroutines, arguments, control flow statements and conditional statements, loop statements, iteration, working with forms, controlling one form within another, using form templates, menus, using message box and input dialogues, MDI(Multi document interface), OLE(Object linking and embedding).

**ActiveX Controls :** The text box control, Basic properties, manipulating the controls text, text selection, search and replace operations, capturing keystrokes, the list box and combo box control's methods, arrows, indexing with the list box control, the scroll bar and slider controls, dialog control.