

2018-  
19

# Multani Mal Modi College

Unit Planning of PGDCA

Computer Science Department



**MULTANI MAL MODI COLLEGE, PATIALA**

**UNIT PLAN**

**Class – PGDCA Sem.-I**

**PGDCA Sem.-I**

**PGDCA-101 Fundamentals of Information Technology**

**Max Marks: 70**

**Maximum Time: 3 Hrs.**

**TILLMST-I**

- **Introduction:** Historical Evolution of Computer, Block Diagram of computer, characterisation of computers, types of computers, the computer generations.
- **Basic Anatomy of Computers:** memory unit, input-output unit, arithmetic logic unit, control unit, central processing unit, RAM, ROM, PROM, EPROM.
- **Input-Output Devices:** Keyboard, Mouse, Joy tick, Track Ball, Touch Screen, Light Pen, Digitizer, Scanners, Voice Recognition Devices, Optical Recognition devices, Dot matrix, Character and Line printer, DeskJet printer, Laser printer, and plotters.
- **Number System:** Non-positional and positional number systems, Base conversion, binary, decimal, hexadecimal, and octal systems, conversion from one system to the other.
- **Binary Arithmetic:** Addition, subtraction and multiplication. Computer Codes: weighted and non-weighted code, BCD, EBCDIC, ASCII, Unicode, XS-3, Grey Codes.
- **Computer Software:** Introduction, types of software, systems software, GUI, operating system, high level languages, assemblers, compilers and interpreters, system utilities, application packages Basic concepts of algorithm and flow charts: Flow charts, algorithm and decision tables, stages in the development of computer program, testing and debugging, program documentation.

**TILLMST-II**

- **Internet Related Concepts:** Internet, Uses of Internet, Basic services of Internet, Email, FTP, TELNET, and WWW.
- **Familiarities with terms:** HTTP, HTTPS, URL, Web Browsers, IP Address, Domain Name, ISP, Web Portal, Search Engines, Blog, Surfing, Wiki.
- **Applications of Information Technology and Trends:** IT in Business and Industry, IT in Education & training, IT in Science and Technology, IT and Entertainment, Current Trends in IT Application - AI, Virtual Reality, Voice Recognition, Robots, Multimedia Technology.

## TILLFINAL EXAM

- **E-Commerce:** Meaning, its advantages & limitations, Infrastructure for E-commerce, Types of E-Commerce Applications. **Multimedia:** Concepts, Components and Application.

### PGDCA-102 Operating Systems

Max Marks: 70

Maximum Time: 3 Hrs.

## TILLMST-I

- **Introduction to operating System:** Definition, its need and Operating system services, Early systems, Introduction to various types of operating systems: Batch processing operating system, Multiprogramming operating system, Time Sharing operating system, Multi tasking operating system, Distributed operating system, Network operating system, Real time operating system, Multi processor system and parallel processing.
- Assignment-1**
- **Process Management:** Process concept, types of Process scheduling, Basic concept of CPU Scheduling, Scheduling criteria, and Scheduling algorithms: FCFS, SJF, Round Robin & Queue Algorithms,
  - **Deadlock** definition and its characterization.

## TILLMST-II

- **Windows:** MS-Windows: Operating system-Definition & functions, basics of Windows. Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders. Control panel – display properties, adding and removing software and hardware, setting date and time, screensaver and appearance. Using windows accessories
- **Linux:** History & Features of Linux, Linux Architecture, File System of Linux, Hardware Requirements of Linux, Various flavours of Linux, Linux Standard Directories, Functions of Profile and Login Files in Linux, Linux Kernel

## TILLFINAL EXAM

- **Linux Commands:** bc, cal, cat, cd, clear, cmp, cp, mv, date, find, ls, pwd, mkdir, more, rm, rmdir, chgrp, chmod, chown, tty, wc, who, whois, grep, telnet, vi editor etc...

<b>Mode of Assessment</b>		
<b>Sr. No.</b>	<b>Component</b>	<b>Weightage</b>
1	Mid Semester Test (MST)	40% (Average of 2 MST)
2	Written Assignments	40%
3	Attendance	20%

**PGDCA-103 Programming Fundamentals through "C" Language****Max Marks: 70****Maximum Time: 3 Hrs.**

<b>TILLMST-I</b>		
<ul style="list-style-type: none"> <li>• <b>Programming Process:</b> Problem definition, program design, coding, compilation and debugging; Program Development.</li> <li>• <b>Basic Constructs:</b> Identifiers, Keywords, Tokens, Data Types, Constants, Input and Output in C, Type Conversion, Operators and Expressions, Precedence Hierarchy of Operators, Associativity, Library functions.</li> <li>• <b>Control Statements:</b> Branching, Looping</li> <li>• <b>Functions:</b> Definition, Prototype, Different types of functions based on arguments and return type, parameter passing mechanisms, concept of recursive function. Storage Classes Different Storage Classes (static, auto, extern, register), global and local variables</li> </ul>		
<b>TILLMST-II</b>		
<ul style="list-style-type: none"> <li>• <b>Arrays:</b> Definition, accessing elements, initialization, passing to functions, multi-dimensional arrays, String handling, Applications of linear arrays: linear and binary search, Bubble Sort and selection Sort</li> <li>• <b>Pointers:</b> address and dereferencing operators, declaration, assignment, passing addresses to functions, using pointer arrays to sort n strings.</li> <li>• <b>Structure and Union:</b> Variables, Accessing members, Nested structures, pointer to structures, concept of self-referential structures, Difference between a union and structure.</li> </ul>		
<b>TILLFINAL EXAM</b>		
<ul style="list-style-type: none"> <li>• <b>File Handling in C:</b> Processing a text file through C program; Concepts of Sequential File and Random File, Text and Binary File, Formatted and Unformatted Files. (File Implementation is left out)</li> </ul>		

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**PGDCA Sem.-II****PGDCA-201 : Database Management System with MS ACCESS****Max Marks: 70****Maximum Time: 3 Hrs.****TILLMST-I**

- **Database Management System:**Characteristics, Database: Definition, components, definition, characteristics, advantages over traditional file processing system, User of database, DBA and its responsibilities, Database schema, instance.
- DBMS architecture, data independence,
- **Database languages:** DDL, DML, DCL.
- **Assignment-1**
- Database utilities, Data Models, Keys: Super, candidate, primary, unique, foreign.
- **Entity relationship model:** concepts, mapping cardinalities, entity relationship diagram, weak entity sets, strong entity set, aggregation, generalization, converting ER diagrams to tables.
- Overview of Network and Hierarchical model.
- **Relational Data Model:** concepts, constraints. Relational algebra: Basic operations, additional operations.

**TILLMST-II**

- **Database Design:**Functional dependency, normalization (upto 3NF), data base recovery, database integrity,
- **Assignment-2**
- Definition and problems arising out of concurrency, Authentication, authorization, methods of implementing security. SQL

**TILLFINAL EXAM**

- **SQL: Basic SQL Query, Creating Table and Views**

**Mode of Assessment**

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PGDCA-202 : Introduction to Computer Network, Internet and E-Commerce

Max Marks: 70

Maximum Time: 3 Hrs.

## TILLMST-I

- **Networking:**Basic, elements in networking, network topology, different types of network LAN, MAN, WAN, GAN, PAN. Networks connecting devices. Open system interconnection model (OSI) Different layers, TCP/IP model and layers. Introduction to intranet and extranet
- **Assignment-1**
- **Internet:**History of the internet, advantages and disadvantages of internet, WWW, IP addressing, domain name system, introduction and working of e-mail.
- **Introduction to Web browser and search engine:**Definition features and type internet explorer, Mozilla Firefox and Netscape navigator, search engine (types, features etc.) Electronic meeting system (Audio conferencing, video conferencing, groupware). Data.
- **Data Communication:** Introduction, Relays, Repeaters, Bridges, Routers, Gateways

## TILLMST-II

- **Overview of E-Commerce Technologies:** Ecommerce: Definition, difference with traditional commerce applications, advantages and disadvantages of e-commerce, types of ecommerce, infrastructure requirements for e-commerce, different ecommerce website and their features.
- **Business models of E-Commerce:** Business to Business, Business to customers, Customers to Customers, Business to Government, Business to Employee.
- **Assignment-2**
- **Electronic Payment System:** Introduction, Online payment systems –prepaid and postpaid payment systems, e-cash, e-cheque, Smart Card, Credit Card, Debit Card, Electronic purse, Security issues on electronic payment system, Solutions to security issues Biometrics –Types of biometrics

## TILLFINAL EXAM

- **Gateways:** Idea of SMS, Email and Payment Gateway Integration

### Mode of Assessment

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**PGDCA-203 : Object Oriented Programming with C++****Max Marks: 70****Maximum Time: 3 Hrs.****TILLMST-I**

- **Evolution of OOP** :Procedure Oriented Programming, OOP Paradigm, Advantages and disadvantages of OOP over its predecessor paradigms. Characteristics of Object Oriented Programming.
- **Introduction to C++** :Identifier, Keywords, Constants, Operators: Arithmetic, relational, logical, conditional and assignment. Size of operator, Operator precedence and associativity. Type conversion, Variable declaration, expressions, statements, manipulators. Input and Output statements, stream I/O, Conditional and Iterative statements, breaking control statements.
- Storage Classes, Arrays, Arrays as Character Strings, Structures, Unions, Bit fields, Enumerations and User defined types.

**Assignment-1**

- **Pointers** :Pointer Operations, Pointer Arithmetic, Pointers and Arrays, Multiple indirections, Pointer to functions. Functions: Prototyping, Definition and Call, Scope Rules. Parameter Passing: by functions, recursion, function overloading, Default Arguments, Const arguments, Pre-processor, Type casting.
- **Classes and Objects** :Class Declaration and Class Definition, Defining member functions, making functions inline, Nesting of member functions, Members access control, this pointer, Objects: Object as function arguments, array of objects, functions returning objects, Const member. Static data member and Static member functions, Friend functions and Friend classes.

**TILLMST-II**

- **Constructors**: Properties, types of constructors, Dynamic constructors, multiple constructors in classes.
- **Destructors**: Properties, Virtual destructors, Destroying objects, Rules for constructors and destructors. Array of objects. Dynamic memory allocation using new and delete operators, Nested and container classes, Scopes: Local, Global, namespace and Class.

**Assignment-2**

- **Inheritance**: Defining derived classes, inheriting private members, single inheritance, types of derivation, function redefining, constructors in derived class, Types of inheritance, Types of base classes, Code Reusability.
- **Polymorphism**: Methods of achieving polymorphic behavior
- **Operator overloading**: overloading binary operator, overloading unary operators,



rules for operator overloading, operator overloading using friend function. Function overloading: early binding, Polymorphism with pointers, virtual functions, late binding, pure virtual functions and abstract base class. Difference between function overloading, redefining, and overriding.

## TILL FINAL EXAM

- **Templates:** Generic Functions and Generic Classes, Overloading of template functions. Exception Handling catching class types, handling derived class exceptions, catching exceptions, restricting exception

### Mode of Assessment

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