

**INSTITUTE OF ADVANCED STUDIES IN  
EDUCATION (DEEMED UNIVERSITY)  
GANDHI VIDYA MANDIR  
SARDARSHAHAR**

**DETAILED SYLLABUS**

FOR DISTANCE EDUCATION

**Post Graduate Diploma In  
Information Technology  
(One Year Semester Scheme)**

Post Graduate Diploma in Information Technology  
(PGDIT)

**COURSE TITLE : POST GRADUATE DIPLOMA IN INFORMATION TECHNOLOGY**

**DURATION : 1 YEAR (SEMESTER SYSTEM)**

**TOTAL MARKS : 1200**

**FIRST SEMESTER**

COURSE TITLE	Paper Code	MARKS		
		THEORY	PRACTICAL	TOTAL
MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE	PGDIT-110	50	50	100
INTRODUCTION TO IT	PGDIT-120	50	50	100
COMPUTER PROGRAMMING USING C	PGDIT-130	50	50	100
DATA BASE MANAGEMENT SYSTEM	PGDIT- 140	50	50	100
LAB (PROGRAMMING IN C)	PGDIT- 150 P	00	100	100
LAB (DBMS)	PGDIT- 160 P	00	100	100

**SECOND SEMESTER**

COURSE TITLE	Paper Code	MARKS		
		THEORY	PRACTICAL	TOTAL
COMPUTER NETWORKS	PGDIT-210	50	50	100
E-COMMERCE	PGDIT-220	50	50	100
.NET FRAMEWORK & C#	PGDIT-230	50	50	100
INTERNET & WEB TECHNOLOGY	PGDIT- 240	50	50	100
LAB (C# PROGRAMING)	PGDIT- 250 P	00	100	100
PROJECT	PGDIT- 260 P	00	100	100

**Note:**

**Theory Paper :** 30% Continuous Internal Assessment and 70% University examination.

**Practical Paper :** 30% Continuous Internal Assessment and 70% University examination

**Continuous Internal Assessment:**

- 1) Two or three tests out of which minimum two will be considered for Assessment  
**60% of Continuous Internal**

**Assessment**

- 2) Seminars/Assignments/Quizzes  
**30% of Continuous Internal Assessment**
- 3) Attendance, class participation and behavior  
**10% of Continuous Internal Assessment**

**PGDIT- 110**

**MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE**

**Maximum Time : 3 Hrs.**

**University Examination : 35**

**Marks**

**Total Marks : 50**

**Continuous Internal Assessment: 15**

**Marks**

**Minimum Pass Marks : 40%**

**A) Instructions for paper-setter**

The question paper will consist of five sections A, B, C, D and E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and will carry 15% marks each. Section E will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

**B) Instructions for candidates**

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of non-programmable scientific calculator is allowed.

**SECTION A**

Sets and Elements, universal set and Empty set, subsets, Venn Diagrams, Set Operations, Algebra of sets, Cartesian product, Relations, mappings, Countable and Uncountable sets, Domain and range, propositional logic, FOPL, Logical equivalences, Quantifiers.

**SECTION B**

Partially ordered sets, Extremal elements of partial ordered sets, least upper bound and greatest lower bound, Finite Boolean algebra, Functions on Boolean algebra, Lattices, Bounded lattices, Distributive lattices, complemented lattices.

**SECTION C**

Matrices, Matrix addition and scalar multiplication, Matrix multiplication, Transpose, Inverse, Determinants, Eigen values and Eigen vectors.  
Permutations, Combinations, Pigeon hole principle, Elements of Probability, Conditional probability, Baye's Theorem.

**SECTION D**

Tree, Binary tree, traversals, Huffman's algorithm, Minimum spanning trees, Euler graph, Hamiltonian cycle, Cutsets, Matching, Coloring.

**Reference:**

1. C.L.Licu, "Elements of Discrete Mathematics", TMH
2. Lipschutz & Seymour, "Discrete Mathematics"( 2<sup>nd</sup> Edition), Schaum's outlines.
3. Trembley Manohar, " Discrete Mathematical Structures with Application to computer science", TMH.

**PGDIT-120**

**INTRODUCTION TO INFORMATION TECHNOLOGY**

**Maximum Time : 3 Hrs. University Examination : 75 Marks**  
**Total Marks : 50 Continuous Internal Assessment : 15 Marks**  
**Minimum Pass Marks : 40%**

**A) Instructions for paper-setter**

The question paper will consist of five sections A, B, C, D and E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and will carry 15% marks each. Section E will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

**B) Instructions for candidates**

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of non-programmable scientific calculator is allowed.

**SECTION A**

Definition of Information Technology, Use of IT, Definition of information system, need of information system, definition of knowledge, Range of application : Scientific, business, educational, weather forecasting, and remote sensing, planning, e-commerce, web publishing, Management Information System, Decision Support System, inventory control, medical, industrial control, banks, railways, etc.

**SECTION B**

Computer Fundamentals: Block structure of computer, Characteristics of computers, Problem solving with computers, Generation of computers, Classification of computers.

Number System : Bit, Byte, Binary, Decimal, Hexadecimal, and Octal system, Conversion from one system to the other, Error detecting codes, Representation of characters, Integers and fractions.

Binary Arithmetic : Addition, Subtraction and Multiplication.

**SECTION C**

Input and Output units : Their functional characteristics, main memory , cache memory read only memory, overview of storage devices – floppy disk, hard disk, compact disk, tape.

**SECTION D**

Computer Networks and Communication : Network types, Network topologies, Network communication devices, Physical communication media, TCP/IP.

Internet and its Applications : E-mail, Telnet, FTP, WWW, Internet chatting.

**Reference:-**

1. D.H.Sanders, "Computers Today", McGraw Hill, 1988.
2. T.N. Trainer, "Computers" (4<sup>th</sup> Edition) McGraw Hill, 1994.
3. Kenneth C.Laudon, Jane P. Laudon "Management Information System"(7<sup>th</sup> Edition),

4. V. Rajaraman, "Fundamentals of Computers" (2<sup>nd</sup> Edition), Prentice Hall of India, New Delhi, 1996.
5. B. Ram, "Computer Fundamentals", Wiley, 1997.

**PGDIT-130**

**COMPUTER PROGRAMMING USING "C"**

**Maximum Time : 3 Hrs. University Examination : 35 Marks**  
**Total Marks : 50 Continuous Internal Assessment : 15**  
**Marks**  
**Minimum Pass Marks : 40%**

**A) Instructions for paper-setter**

The question paper will consist of five sections A, B, C, D and E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and will carry 15% marks each. Section E will have 10-20 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% marks in all.

**B) Instructions for candidates**

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of non-programmable scientific calculator is allowed.

**SECTION A**

Data types, constants, Variables, Arithmetic and logical expressions, Data input and output, Assignment statements, Conditional statements.

**SECTION B**

Iteration, Arrays, String processing, User-defined data types, functions, recursion, Parameter passing by reference & by value.

**SECTION C**

Structures, Multiple Structure, Array of Structure, Unions, Pointers, Character pointers, Pointers to arrays, Array of pointers, Pointers to structures.

**SECTION D**

File handling, Open & closing file Binary files,  
Structured programming concepts, Top down & Bottom-Up design approaches.

**Reference:-**

1. Rajarman V., "Fundamentals of Computers" (PHI, 1992)
2. D.Dromey "How to solve it by Computer", Prentice-Hall, 1985
3. E. Balaguruswami "Programming in C" Tata McGraw Hill.
4. Kanetkar, "Let Us C" BPB Publications.

**Maximum Time : 3 Hrs.**

**University Examination : 35 Marks**

**Total Marks : 50**

**Continuous Internal Assessment : 15 Marks**

**Minimum Pass Marks : 40%**

**(A) Instructions for the Paper setter:**

The question paper will consist of five sections: A, B, C, D and E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and will carry 15% of the total marks each. Section E will consist of 10 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% of the total marks in all.

**(B) Instructions for the Candidates:**

1. Candidates are required to attempt one question each from the section A, B, C and D of the question paper and the entire section E.
2. Use of non-programmable scientific calculator is allowed.

**SECTION A**

Database V/s File system, Architecture of DBMS(External, Conceptual, Internal), Data Independence ( Logical Physical) DBA and his responsibility, DBMS structure (DDL Compiler, Data manager, File manager, Disk Manager, Query Processor).

**SECTION B**

Entity, Entity Set, Attributes Keys(Primary, Secondary, Candidate, Super, Alternate), Mapping cardinalities, N-array relationships, E-R- Diagram, Hierarchical Model ,Relational Model, Network Model, Object oriented Model, Mapping of E-R diagrams to tables.

**SECTION C**

Anomalies in Design, Functional Dependency, Logical implications, Closure of FD, Canonical Form, Full and Partial FD, Prime and Non-prime attributes, 1-NF, 2-NF, 3-NF, BCNF, Decompositions, lossless and Dependency preservance.

**SECTION D**

Integrity rules (Entity integrity, Referential Integrity) Union, Difference, Intersection, Cartesian product Division, Projection, Selection, Joins.

Type calculus, Type calculus Formula, Domain calculus, SQL, Basic data retrieval, Data manipulation, views.

Recovery techniques, check points, concurrency control, View & conflict serializability, Lock based concurrency control, strict two phase locking, multiple granularity locking, Time stamp based concurrency control.

**References:**

1. Bipin C. Desai, "An Introduction to Database Systems", Galgotia Publications Nt. Ltd.
2. Elmasri Navathe, "Fundamental of Database Systems", Pearson Edition.
3. C.J. Date, "An Introduction to Database System"(7<sup>th</sup> Edition) Pearson Edition.

**PGDIT-150 P            SOFTWARE LAB (PROGRAMMING IN C)**

**Maximum Time            : 3 Hrs.                            University Examination                            : 70 Marks**  
**Total Marks             : 100    Continuous Internal Assessment : 30**  
**Marks**  
**Minimum Pass Marks : 40%**

This laboratory course will mainly comprise of exercises on what is learnt under paper : PGDIT-130 (Computer Programming using C).

**PGDIT-160 P                            SOFTWARE LAB (DBMS)**

**Maximum Time            : 3 Hrs.                            University Examination                            : 70**  
**Marks**  
**Total Marks             : 100    Continuous Internal Assessment : 30**  
**Marks**  
**Minimum Pass Marks : 40%**

Programming in SQL.

## SECOND SEMESTER COMPUTER NETWORK

PGDIT-210

SMaximum Time

: 3 Hrs.

University Examination

: 35 Marks

**Total Marks**

**: 50**

**Continuous Internal Assessment : 15**

**Marks**

**Minimum Pass Marks : 40%**

### **(A) Instructions for the Paper setter:**

The question paper will consist of five sections: A, B, C, D and E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and will carry 15% of the total marks each. Section E will consist of 10 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% of the total marks in all.

### **(B) Instructions for the Candidates:**

1. Candidates are required to attempt one question each from the section A, B, C and D of the question paper and the entire section E.
2. Use of non-programmable scientific calculator is allowed.

### **SECTION A**

Computer Networks: Uses of Computer Network, Network Hardware, Network Software, Goals and Applications of Computer networks, Computer Network Structure and Architecture.

Reference Models: OSI Reference Model, TCP/IP reference Model, Comparison of OSI and TCP Reference Model, Introduction of Novell Netware, ARPANET.

### **SECTION B**

Local Area Network: IEEE standards 802 for LAN's and MAN's (802.2, 802.3, 802.4, 802.5, 802.6 ). Bridge-bridges from 802.x to 802.y, transparent bridges, source routing bridges, remote bridges, comparison of 802 bridges, High speed LANs – FDDI, Fast Ethernet, HIPPI, Fibre channel, Satellite network Polling, ALOHA, FDM, TDM, CDM.

### **SECTION C**

The Internet Protocol - Introduction to Internetworking, The IP protocol, IP Addresses, Subnets, Internet Control Protocol, Interior and Exterior gateway routing protocol., internet multicasting mobile IP, CIDR, IPv6.

The Transport Protocol – Elements of transport protocol, A simple transport protocol, TCP-Service model, TCP protocol, Segment header, Connection management, Transmission policy, Congestion control, timer management, UDP.

### **SECTION D**

Internet Applications: Domain Name System, Electronic mail, The World Wide Web, Multimedia - Audio, Video, Data compression, File Transfer Protocol, (FTP), Simple Mail Transfer Protocol, Telnet, HTTP.

#### **References:**

1. A.S. Tannenbaum, "Computer Networks", Third Edition, PHI Publications, 1999.
2. D.E. Corner, "Computer Networks and Internets", 2<sup>nd</sup> Edition, Addison-Wesley Publication, 2000.
3. D.E. Corner and D.L. Stevens, "Inter-networking with TCP\_IP : Design, Implementation and Internals", Vol. II, Prentice Hall, 1990.
4. D. Bertsekas and R. Gallager, "Data Networks", 2nd Edition, Prentice Hall, 1992.
5. Stevens W.R. "UNIX Network Programming," Prentice Hall, 1990.

**PGDIT-220****E-COMMERCE**

**Maximum Time : 3 Hrs.**  
**Marks**

**University Examination : 35**

**Total Marks : 50**  
**Minimum Pass Marks : 40%**

**Continuous Internal Assessment : 30 Marks**

**(A) Instructions for the Paper setter:**

The question paper will consist of five sections: A, B, C, D and E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and will carry 15% of the total marks each. Section E will consist of 10 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% of the total marks in all.

**(B) Instructions for the Candidates:**

Candidates are required to attempt one question each from the section A, B, C and D of the question paper and the entire section E.

**SECTION A**

Electronic commerce framework, Electronic commerce and media convergence, The anatomy of e-commerce applications. Market forces influencing the I-way, Components of the I-Way, Network access equipment, Global information distribution networks, Public policy issues shaping the I-way.

**SECTION B**

Client-Server Network Security, Emerging client-server security threats, Firewalls and Network security, Data and message security, challenge response system, Encrypted documents and electronic mail, U. S. Government regulations and encryption, Summary.

Architectural framework for electronic commerce , WWW as the architecture, Web background : Hypertext publishing, Technology Behind the web, security and the Web, summary.

**SECTION C**

Consumer-oriented applications, Mercantile process models, mercantile models from the consumer's perspective, mercantile models from the merchant's perspective, summary.

**SECTION D**

Types of electronic payment systems, digital token-based electronic payment systems, smart cards and electronic payment systems, credit card-based electronic payment systems, risk and electronic payment systems, designing electronic payment systems, summary.

**Reference:**

1. Ravi Kalkota : Frontiers of Electronic commerce, Addison Wesley.
2. Kamlesh K. Bajaj & Debjani Nag, E-commerce, The cutting edge of business, Tata McGraw Hill.
3. Pete Losuin and A. Murphy, Electronic commerce, A Jaico book.
4. Green Stein "Understanding electronic commerce" PHI.

5. Kosiur, "Understanding electronic commerce" PHI.
6. Kienan, "Managing your E-commerce Business, PHI.

**PGDIT-230**

**. NETFRAMEWORK AND C#**

**Maximum Time : 3 Hrs. University Examination : 35 Marks**  
**Total Marks : 50 Continuous Internal Assessment : 15 Marks**  
**Minimum Pass Marks : 40%**

**(A) Instructions for the Paper setter:**

The question paper will consist of five sections: A, B, C, D and E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and will carry 15% of the total marks each. Section E will consist of 10 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% of the total marks in all.

**(B) Instructions for the Candidates:**

Candidates are required to attempt one question each from the section A, B, C and D of the question paper and the entire section E.

**SECTION A**

. Net framework, Common language runtime, Framework Base classes, User and Program Interfaces, Visual Studio. NET, NET languages, Benefits of . NET Application C# and . NET.

**SECTION B**

Name Spaces, Main Returning a value , Passing string objects write line method. Command line arguments, using mathematics functions, Literals, Variables, Operators, Expressions.

Decision making (if, if.....else, Nested if, else.... If ladder, Switch , ? : Operator) Looping ( While, do , for , for each Jumps in loops)

**SECTION C**

Methods, Parameters, Pass by value, Pass by reference, Methods overloading, Arrays, Strings, Structures, Enumerations, Difference between class & structure.

Classes, access modifiers, accessing class members, constructors, overloaded constructors, copy constructors, destructors.

**SECTION D**

Classical Inheritance, Containment inheritance, Subclasses constructors, Multilevel, Hierarchical Inheritance, Abstract classes, Defining and Implementation of Interfaces, Interfaces and Inheritances, Overloading unary and binary operators.

Delegates and events, exceptions, multiple catches, finally statement, throwing and own exception.

**Reference:**

1. Shibi Panikkar and Kumar Sanjeev, "Magic of C# with .NET FrameWork", Laxmi Publication
2. P. Jalota, "An Intergrated Approach to software Engineering", Narosa Publishing House.

## **PGDIT-240**

## **INTERNET & WEB TECHNOLOGY**

**Maximum Time : 3 Hrs. University Examination : 35**  
**Marks**  
**Total Marks : 50 Continuous Internal Assessment : 15**  
**Marks**  
**Minimum Pass Marks : 40%**

### **(A) Instructions for the Paper setter:**

The question paper will consist of five sections: A, B, C, D and E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and will carry 15% of the total marks each. Section E will consist of 10 short answer type questions, which will cover the entire syllabus uniformly and will carry 40% of the total marks in all.

### **(B) Instructions for the Candidates:**

1. Candidates are required to attempt one question each from the section A, B, C and D of the question paper and the entire section E.
2. Use of non-programmable scientific calculator is allowed.

### **SECTION A**

Definition of Internet, Internet organisation and committees, Internet, Growth of Internet, Internet- 3, Anatomy of Internet, Internet Application, Portals, Introduction about WWW, Definition of DNS ( Domain Name System), IP Addressing.

### **SECTION B**

Definition of Networks, Types of Network, Topologies, PSTN, PSDN,VAN, ISDN, PDNs, Wide Area Network, Introduction about search engines ( Mozilla, Netscape, Opra) Email, Introduction about mail protocol (SMTP, MME), X.25, Frame relay, PPP, NNTP, SMTP, etc.

### **SECTION C**

OSI Reference method, TCP/IP model, FTP, HHTTP, HTTPS, Addressing in Internet ( Class A,B,C,D,E) Definition of Ethernet, Intranet, Telnet, Wireless communication, Virtual Circuits, ISDN model, CSMA/CD, Explanation of all layers of OSI and TCP/IP model.

### **SECTION D**

Introduction to HTML, Tag, Types of Tags, Forms, Tables, Images insertion in web page, Introduction to DHTML, CGI, Introduction about XML.

### **Reference:-**

1. A.S. Tanenbaum, "Computer Networks"(3<sup>rd</sup> Edition), PHJ,1999

