GIIT

PROFESSIONAL COLLEGE

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

Course Structure

Academic Session : **2015 - 2018**

Year	PAPER TYPE		Paper Code	GROUP	DESCRIPTION OF PAPER	Total Marks		PASS MARKS	Exam Hours
						Internal Assignment	University Exam.		
FIRST YEAR (PART – I)	THEORY	HONORS	1A	A	COMPUTER ORGANISATION ARCHITECTURE	-	50	23	3 Hrs.
				B	SYSTEM ANALYSIS AND DESIGN				
			2A	A	OPERATING SYSTEM	-	50	23	3 Hrs.
				B	LINUX OPERATING SYSTEM				
			3A	A	PROGRAMMING IN C	-	50	23	3 Hrs.
				B	DATA STRUCTURE USING C				
			4A	A	DATABASE USING FOXPRO	-	50	23	3 Hrs.
				B	DATA HANDLING METHODOLOGY				
		SUBSIDIARY	1	-	MATHEMATICS	-	100	33	3 Hrs.
			2	-	CHEMISTRY/PHYSICS	-	75	23	3 Hrs.
		COMPOSITION	-	-	A) M I L HINDI or B) MIL NON-HINDI (**See Note**)	-	100	33	3 Hrs.
	PRACTICAL	HONORS	1B	-	MS – OFFICE AND HTML	25	25	23	3 Hrs.
			2B	-	MS – DOS AND UNIX	25	25	23	3 Hrs.
			3B	-	PROGRAMMING IN C	25	25	23	3 Hrs.
			4B	-	FOXPRO 2.6 FOR WINDOWS	25	25	23	3 Hrs.
		SUBSIDIARY	2B	-	CHEMISTRY/PHYSICS	5	20	10	3 Hrs.
SECOND YEAR (PART – II)	THEORY	HONORS	5A	A	NETWORKING DATA COMMUNICATION	-	50	23	3 Hrs.
				B	XML				
			6A	A	RELATIONAL DATABASE MANAGEMENT	-	50	23	3 Hrs.
				B	ORACLE				
			7A	A	PROGRAMMING IN C++	-	50	23	3 Hrs.
				B	ADVANCED C++				
			8A	A	VISUAL BASIC	-	50	23	3 Hrs.
				B	VB DATABASE PROGRAMMING				
		SUBSIDIARY	1	-	MATHEMATICS	-	100	33	3 Hrs.
			2	-	CHEMISTRY/PHYSICS	-	75	23	3 Hrs.
		COMPOSITION	-	-	A) M I L HINDI or B) MIL NON-HINDI (**See Note**)	-	100	33	3 Hrs.
	PRACTICAL		5B	-	PRACTICAL IN XML	25	25	23	3 Hrs.
			6B	-	PRACTICAL IN ORACLE	25	25	23	3 Hrs.
			7B	-	PROGRAMMING IN C++	25	25	23	3 Hrs.
			8B	-	PROGRAMMING IN VISUAL BASIC	25	25	23	3 Hrs.
		SUBSIDIARY	2B	-	CHEMISTRY/PHYSICS	5	20	10	3 Hrs.
THIRD YEAR (PART – III)	THEORY	HONORS	9A	-	WEB TECHNOLOGY using DHTML, JAVASCRIPT, ASP	-	50	23	3 Hrs.
			10A	A	CORE JAVA	-	50	23	3 Hrs.
				B	ADVANCED JAVA				
			12	-	ENTERPRENUERSHIP DEVELOPMENT	100	-	33	3 Hrs.
	PRACTICAL	HONORS	9B	-	PRACTICAL ON DHTML, JAVASCRIPT, ASP	25	25	23	3 Hrs.
			10B	-	PRACTICAL IN JAVA	25	25	23	3 Hrs.
			11	A	On-Job-Training on 9B & 10B	50	-	23	-
				B	PROJECT WORK	50	-	23	-

Note:For Composition, candidate can choose option (A) or (B)

(a) MIL Hindi : One full paper of 100 marks for each of the Part-I and Part-II examination.

(b) MIL Non – Hindi : Hindi - 50 marks and any one of the following languages (50 marks) for each of the Part-I and Part-II Examination Bengali, Oriya, Urdu, Alt. English.

Course Name : **B.Sc.IT (Second Year)**			Academic Session: **2015 - 2018**	
Paper	**Subject Name**	**Paper**	**Subject Name**	**Paper**
Hons. P – 5 Theory	Networking Data Communication	**Books Recommended:** Data Communication and Networking 4th Edition	Behrouz A. Forouzan	McGraw Hill
Hons. P – 5 Theory	XML	**Books Recommended:** a)		
Hons. P – 6 Theory	Relational Database Management System	**Reference Recommended :** Database Management System	A K Majumdar	McGraw – Hill
	Oracle	**Books Recommended:** Oracle Developer 2000 Forms 6i	Ivan Bayross	BPB Publications
Hons. P – 7 Theory	Programming in C++	a) Object Oriented Programming with C++**, Sixth Edition**	E Balaguruswamy	Tata McGraw-Hill
	Object Oriented Analysis and Design	**Books Recommended:** a) Object Oriented Analysis and Design	Grady Booch	Addison-Wesley Professional
Hons. P – 8 Theory	Visual Basic	**Reference Recommended:** a) Visual Basic 6: The Complete Reference	Noel Jerke	Mcgraw-Hill

Course : **B.Sc.IT** Year : **Second (Part - II)**		**Faculty**
01)	Networking Data Communication	**Prakash Bhai Patel**
02)	Relation Database Management System	**Shree Ranjan**
03)	Programming Using C++	**Satya Prakash Singh**
04)	Programming in Visual Basic	**Binod Kumar**
05)	Mathematics	**Abhishek Kukmar**
06)	Chemistry	**Nisha Kumari**
07)	M I L Hindi	**Sabita Paul**
08)	XML (**Practical)**	**Prakash Bhai Patel**
09)	Oracle (**Practical)**	**Prakash Bhai Patel**
10)	Visual Basic (**Practical)**	**Raj Kumar**
11)	Programming using C++ (**Practical)**	**Raj Kumar**

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY	PART – II	SECOND YEAR

HONORS THEORY PAPER

PAPER – 5A **NETWORKING DATA COMMUNICATION**

GROUP – A	GROUP - B
NETWORKING DATA COMMUNICATION	**X M L**
Ø Basic network concepts, advantages of computer network, types of networks LAN, WAN, MAN, Network topologies. Hardware requirement of a network topologies. Hardware requirement of a network. Network operating system. Ø A communication model tasks, three-layer approach to protocols, brief introduction to TCP/IP & OSI (brief function to different layers). Ø **Data transmission:** Concept & terminology, analog & digital data transmission. Transmission impairments. Guided transmission media. Ø Data encoding digital signal, digital data analog signal, analog data digital Signal & analog data analog signal. Ø Asynchronous & synchronous transmission, interfacing. Ø **Data link control**: Flow control, error detection (CRC), Error control, High level data control (HDLC), Multiplexing, statistical time division multiplexing. Ø **Circuit switching:** Switching network, circuit switching networks, switching concepts, routing in circuit switched networks. Ø **Packet switching:** Packet switching principals, routing, congestion & control, X.25, Digistra's algorithm, Bellman ford algorithm. Ø **LAN Technology:** PAN architecture, Bus/ Tree LAN, Ring & star LANs. Ethernet & fast Ethernet (CSMA/CD), Token ring & FDDI. Ø **Bridges:** Bridge operation, routing with bridges.	ØIntroduction to XML, Document Type Definition (DID), XML Schema Declaring attributes Namespaces, grouping elements & attributes Name spaces, grouping elements & attributes. Rendering XML Documents CSS, XSLT, displaying data in tabular format using HTML, Tags within XSLT, XML Document object model objects & methods using XML OOM objects in scripts.Overview of Systems Analysis and Design, System Development

PAPER – 6A **RELATIONAL DATABASE MANAGEMENT SYSTEM**

GROUP – A	GROUP - B
RDBMS	**ORACLE**
Ø Introduction to DBMS Purpose, difference with respect to conventional file processing system, data independence, data models (object based, record based, physical data models), database manager, database administrator, overall system structure. Ø Entity - relationship model. Relationship sets, mapping, keys, & entity sets, entity relationship diagram, specialization generalization, & aggregation, database scheme under relational model. Ø Relational algebra Project, select, Cartesian product, natural join, join, union, intersect, minus, division operations. Ø Normalizations Functional dependency, INF, 2NF, 3NF, BCNF, multivalued, dependency & 4NF. Lossless joins, dependency preservation, redundancy preservation, redundancy control, & integrity Preservation during decomposition. Ø Transaction – concept, transaction state, concurrent executions, serialisability, conflict serialisability. Ø Concurrency control locks, granting of locks, timestamp based protocol, deadlock prevention, detection & recovery.	Ø Oracle functions, SQL, , (DDL, DML), simple queries, nested sub queries, self-joint, Equijoin, Non-equijoin. PL/SQL programming (Writing small blocks for data manipulation). Update, Insert Triggers, Views & grants under Oracle (DCL).

PAPER – 7A **PROGRAMMING IN C++**

GROUP – A	GROUP – B
Programming in C++	**ADVANCED C++**
Ø **Concept** of OOPS & differences with procedural languages Ø **Characteristics** of OOPS (Idea of objects, class, data abstraction & encapsulation, inheritance polymorphism, dynamic binding, I/O stream, CM, Count, I/O manipulation). Ø **Data types**, operators, control structure & looping statements, functions & arrays. Ø **Objects & Classes:** Classes & objects, constructor, destructor, overloading binary operators, data conversion. Ø **Inheritance :** Derived class & base class, protected access specifier, derived class constructors, class hierarchies, abstract base class, public & private inheritance, multiple inheritance, containership (Classes within classes)	Ø **Pointers** : Address & pointers, pointers & arrays, memory management, "New" & "Delete" pointer to objects, linked list, pointer to pointer. Ø **Virtual functions:** Virtual functions, friend functions, static functions, "This" pointer. Ø **Files & Streams:** String, String I/O, object I/O, I/O with multiple objects file pointer, error handling & redirection.

	Ø **Templates** in C	
BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY	**PART – II**	**SECOND YEAR**

HONORS THEORY PAPER

PAPER – 8A | **PROGRAMMING IN VISUAL BASIC**

GROUP - A — VISUAL BASIC

- Ø **Visual Basic IDE :** Menu bar, tool bar, project explorer, toolbox properties window, from designer, from layout, immediate window, elements of users interface, design of interface aligning the controls, programming the command buttons. Grouping controls, event driven programming, focus.
- Ø **Visual Basic environment**, the editor tab, editor format tab, environment tab, advanced tab.
- Ø **Visual Basic language :** Variables & their types, scope & lifetime of a variable, constants, arrays, collections, subroutines, functions, calling procedures, argument passing, function 'return values & arrays.
- Ø **Control flow statements**: if-then, if-then-else, selected case. Loop statements do-loop, for-next, & while-wend. Nested control structures, exit statement.
- Ø **Forms:** Start up forms, loading, showing & hiding forms, controlling one form from within another, designing menus, drag & drop operations, text-box control, scroll bar & slider control, file control, file control, MDI editor, implementation of scrolling forms.
- Ø **OLE Automation:** OLE terminology, OLE container controls, OLE drags and drops operations, and OLE automation.

GROUP - B — VB DATABASE PROGRAMMING

- Ø **Database Programming:** Record sets, data control, Data control properties, Data control methods, Visual data manager, Validating data (validate event, error event), Accessing fields in Record sets, Attaching queries to a database, Data bound controls (list, combo box, grid).
- Ø **Database object** - Table def object, Query Def object.
- Ø **Active Data object:** Design of command hierarchies, data environment with Data grid control, programming add, add object model.
- Ø **Windows API:** Accessing Win32 API from visual basic, API function arguments, 32-bit functions and structures, free disk space determination & other file functions.

***** Note **(Backend should be access)**

SUBSIDIARY THEORY PAPER

PAPER – 1 | **MATHEMATICS**

GROUP – A — REAL ANALYSIS

- Ø (Notebook course relates to real function of a real variable). Limits and Continuity: both sides limits, limit. Continuity, discontinuities (Definition, example, testing, algebra of limits). Partition of domain of a continuous function. Continuity and boundedness.
- Ø Derivability, Relationship with continuity, Rolle's Theorem, Lagrange's Mean Value Theorem, Taylor's and McLaurin's Theorem with Rn.
- Ø Riwmann Inegration, Definition, Oscillatery sum and integrability conditions. Integrality of monotomic and continuous functions, Fundamentals Theorems of Integral Calculus.

GROUP – B — SET THEORY

- Ø Indexed family of sets, Generalised set operations & Demorgan Laws, set mapping.
- Ø Bijection: Countable and uncountable sets. Equivalence relation and related fundamental theorem of partition.
- Ø Partial order relation and relate concepts of u. b., l. b., inf., sup, maximal elem&it, imnimal element and lattice (definition and examples only). Statement of Zorn's lemma.

GROUP – C — COMPLEX VARIABLES

- Ø Real functions of two variables: Simultaneous and iterated limits: Continuity partial derivatives, differentiability and related necessary and sufficient conditions.
- Ø Functions of a complex variables Limit, Continuity, derivative, Cauchy-Riemann Equations, Analytic Function, Harmonic function.
- Ø Import of some standard transformations e.g., w=z + x.w = cz, w=1/ z.w= (az+b)/(cz+d) bilinear). Conformal, Transformation as transformation effected by analytic function. Special conformal transformation w=z2. w=e2, w=sin z.

GROUP – D — ABSTRACT ALGEBERA

- Ø Binary operations, Notion of group, Abelian group and non-abe-lian group with examples. Uniqueness of identity element and inverse elements in group. Different way's of defining a group, concept ofsubgroup and cyclic group, Cosets, Lagrange's theorem.
- Ø Matrices, operations on matrices, matrix algebra, kinds of matrices, Transpose, adjoint and inverse of a matrix. Product of de-terminants, Rank of matrix, Solution of system of linear equations.

GROUP – E — DIFFERENTIAL EQUATIONS

- Ø First order higher degree, Clairauts's from, Singular Solution, Orthogonal trajectories.
- Ø Linear Equations with constant co-efficients, homogeneous linear equations with variable co-efficients.
- Ø Simultaneous equation dx/p = dy/9 = dz/R and total d.e. Pdx + Qdy + Rdz o, together with their geometrical

significance.

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY	PART – II	SECOND YEAR

SUBSIDIARY THEORY PAPER

PAPER – 2 | **CHEMISTRY**

GROUP – A — INORGANIC CHEMISTRY

- **IONIC BONDS:**Lattice energy, Born-Haber cycle, Factors favoring ionic bonds, Variable valency, Properties of Ionic compounds.
- **Covalent bonds:** Formation of sigma and pi bonds, Hybridization and directional bonding Valence Bond Theory), structures and shapes of eCt, BF3, PC!5, SF4, SnCl2, HaO, NH3 and CH4, Properties of covalent compounds.
- **General discussion of group MIA and IVA elements, Preparation, properties and uses of the following:** Hydrazine, Hydrazoic acid, Hydroxyl amine, Phosphorous acid, Phosphoric acid, Pyrophosphoric acid, Metaphoric acid, Potassium dichromate, and Potassium permanganate.
- Metals: Occurrence. Metallury, properties and uses of chromium, manganese, cobalt and nickel and their compounds

GROUP – B — ORGANIC CHEMISTRY

- **Isomerism:** Structural and stereoisomerism solution of racemic mixtures. Elements of symmetry
- **Hydroxy acids:**Lactic acid, tartaric acid and citric acid-their isolation synthesis, properties, constitution. Isomerism of lactic acid and tartaric acid.
- **Carbohydrates:** Classification, nomenclature, structure of glucose and fructose their interconversions, Configuration and preliminary treatment of ring structure.
- **Aromatic compounds:** Benzene and its monosubstituted derivatives: Toluene, Nitrobenzene, Aniline, Benzene diazonium chloride, Phenol, benzaldehyde. Benzene sulphonic acid, benzoic acid (Preparation, properties and uses) Elementary idea of electrophilic substitution in bnezenering
- **Important reactions:** Perkin reation, Friedel Grafts reaction, Cannizzaro's reaction Kolbe's reaction, Sandmeyer's reaction. Reformatsky reaction, Reimer-Tiemann reaction.

GROUP – C — PHYSICAL CHEMISTRY

- **Chemical kinetics:** Rate of reaction, order and molecularity of reaction. First and second order reaction. Determination of order of reaction Effect of temperature on reaction rate. Activation energy.
- **Catalysis:** Characteristics of catalysts, Types of catalysts, Enzyme catalyst. Theory of catalysis, Autocatalysis, charge on colloids. Electrophoresis, coagulation, dialysis, Brownian movement, Gold number
- **Thermodynamic:** Second law of thermodynamics. Conversion of heat into work, Carnot Theorem and Camot cycle. Entropy, entropy changes in reversible and irreversible processes. Entropy of expansion of ideal gases. Entropy" of mixing of gases.
- **Electrochemistry:** Equivalent and molecular conductivities. Effect of dilution on different types of conductivities, Experimental determination of conductivities. Conductivity cell and cell constant. Ionic mebilitie, Kohirausch law. Transference number. Arrhenius" theory of electrolytes. Dissociation of weak and strong electrolytes. Specific, equivalent.

HONORS PRACTICAL PAPER

PAPER – 5B | **XML**

- Creating an XML document, Creating XML Schema, Declaring Attributes and using components of one schema into another, Creating XSLT style sheet for formatting data

PAPER – 6B | **ORACLE**

- Writing and executing simple and complex queries
- Creating and alteration of tables
- Updating, Inserting, Deleting to/from a table
- Writing simple PL/SQL codes for data manipulation
- Database Triggers

PAPER – 7B | **C++ Programming**

- Programming using C++

PAPER – 8B | **VISUAL BASIC**

- Designing simple layout using buttons, textbox, label, combo box etc.
- Making a front end application to connect to remote or local database
- Generating simple client application

SUBSIDIARY PRACTICAL PAPER

PAPER – 2B | **CHEMISTRY**

- **Preparation of the following compounds :** Aspirin from salicylic acid, p-Methylacetanilide from p-Toluidine,Acetanilide from aniline, Benzanilide from aniline, m Dinitrobenzene from nitrobenzene,p-Nitroacetanilide from acetanilide, Detection of nitrogen, sulphur and halogen in organic compounds containing one functional group including monosaccharides. (—COOH, phenolic-OH, aldehyde, ketone, nitro, ammo and amides)

PAPER – 2B | **PHYSICS**

- Young's modulus of a beam by bending method
- Newton's ring
- I-d graph by spectrometer
- Resistance of a galvanometer by half deflection method
- Figure of merit of a galvanometer
- Variation of resistance of a wire with temperature
- Calibration and use of a thermocouple.

Ø **Viva voice and note book:** Distribution of marks : Experiment 1 : 10marks Experiment 2:10 marks Note book viva : 2.5 + 2.5	Ø Earth inductor Ø De Sauty's bridge Ø Characteristics of transistors

COMPOSITION PAPER

M I L - HINDI

Ø ,

Ø :

. : ,

. : ,

. : ,

. : ,

. :