TEACHING AND EXAMINATION SCHEME
B. Sc. Information Technology - I Year
W.E.F. 2019-2020

	Paper Name (Theory)	Lec	Exam Hours	MARKS Min	MARKS Max
bit-101	Computing Logics & Reasoning	3	3	18	50
bit-102	Foundation Course in IT	3	3	18	50
bit-103	Office Automation & PC Software	3	3	18	50
bit-104	C Programming & Data Structures	3	3	18	50
bit-105	Circuit Analysis & Electronic Devices	3	3	18	50
bit-106	Database Management Systems	3	3	18	50
	Total of Theory Marks				**300**

	Paper Name (Practical)	Pract Hours	Exam Hours	MARKS Min	MARKS Max
bit-107	Programming in C & DSA	3	3	18	50
bit-108	DBMS	3	3	18	50
bit-109	Office Automation & PC Software	3	3	18	50
	Total of Practical Marks				**150**
	Total of Theory & Practical Marks				**450**

B. Sc. (Information Technology)
Scheme of Examination

Theory:
    Part A:
1. 10 Question of 1.5 mark each – 15 marks
2. Answer should not exceed more than 50 words
3. All questions are compulsory

    Part B:
1. 5 Questions of 3 marks each – 15 marks
2. Answer should not exceed more than 50 words
3. All questions are compulsory

    Part C:
1. 3 Questions of 7+7+6 marks each – 20 marks.
2. There will be an internal choice in each question.
3. Answer should not exceed 400 words

Practical & Projects:
Practical exams shall be conducted by one internal and one external examiner of a batch of 40 students in a day.
Duration of Practical exam is 3 hours.
A Laboratory Exercise File should be prepared by each student for each practical paper and should be submitted during practical examinations.
Practical of 50 marks distribution is as under:
    a. 30 marks for practical examination exercise for 3 questions
    b. 10 marks for Viva-voce
    c. 10 marks for Laboratory Exercise File

The number of paper and the maximum marks for each paper are shown against each subject separately. It will be necessary for a candidate to pass in the theory part as well as the practical part of a subject/paper, wherever prescribed, separately.

Classification of successful candidates shall be as follows:

First Division	60%	of the aggregate marks prescribed at (a) Part I Examination, (b) Part II Examination,
Second Division	48%	(c) Part III Examination, taken together

All the rest shall be declared to have passed the examination, if they obtain the minimum pass marks in each subject viz. 36% no division shall be awarded at the Part I and Part II examination.

Note:
    Eligibility for admission in First year of B. Sc. (IT) is 10+2 with Science examination of any board with at least 50% marks. As regards admission on reserved category seats government rules will be applicable.

Duration: 3 hours	**Max Marks: 50**

bit-101Computing Logics & Reasoning

Number systems: Natural numbers, integers, rational numbers, real numbers, complex numbers, arithmetic modulo a positive integer (binary, octal, decimal and hexadecimal number systems), radix r representation of integers, representing negative and rational numbers, floating point notation.

Binary arithmetic, 2's complement arithmetic, conversion of numbers from one of binary/ octal/decimal/hexadecimal number system to other number systems, codes (natural BCD, Excess-3, gray, octal, hexadecimal, alphanumeric – EBCDIC and ASCII) error codes.

Law of formal logic, connectivity, propositions, conditional statements, WFF, tautology, contradiction, logical equivalence, law of logic, duality, logical implications, normal forms, sets, sub-sets, finite and infinite sets, universal, power, disjoint sets, property of sets, union, intersection sets, distributive, compliment and property of compliment, Venn diagram, difference, cartisan product set.

Relation property, irreflexive, asymmetric, compatible universal complimentary relation, equivalence class, coordinate diagram, transitivity extension, closure, matrix representation and digraph, functions, mapping, composition of functions, associative mapping, inverse mapping, characteristic functions, recursions, linear recursion relation, non-homogenous relations.

Partial ordering, total order set, dual order, Hasse Diagram, Lexicographic ordering, least and greatest element, minimal and maximal element, upper and lower bound, well-order set, operations, well-ordering theorem, lattices property, bounded lattices, direct product, Boolean algebra, homomorphism, minimization function, gates, Boolean algebra and applications.

Duration: 3 hours	**Max Marks: 50**

bit-102Foundation Course in IT

Introduction to Computer: Definition, Characteristics, Classification of Computers, Analog Computers, Digital Computers, Hybrid Computers, Classifications of computer on the basis of size and speed, different type of computers, generation of computers.

Computer keyboard, pointing devices, mouse, track ball, touch pad, joystick, touch – sensitive screens, pen – based systems, digitizer, data scanning devices, optical recognition systems, bar code readers, optical mark readers, optical scanners, drum scanners, hand scanner, flatbed scanner, web camera, game pad, digital camera.

Hard copy devices: Printer, impact printers, daisy wheel, dot matrix printer, line printer, chain printers, comb printers, non-impact printers, DeskJet, inkjet printers, laser printer, thermal transfer printer, barcode printers.

Computer Display: CRT, LCD, projection displays, plasma display panel, display standard, monochrome display adapter, HGA, CGA, EGA, VGA, MGA, SVGA, XGA, QVGA, SXGA, UXGA

Introduction to memory, classifications, random-access memory, volatile memory, non-volatile memory, flash memory, read-only memory, secondary memory, the cache memory, auxiliary storage memory, memory hierarchy, storage devise, magnetic tape, magnetic disk, floppy disk, hard disks, CD, DVD, magneto-optical.

Number system, binary, octal, hexadecimal, addition, subtraction, multiplications, computer code: BCD, ASCII, EBCDIC code, Excess-3 code, gray code, software, User interface, system software, programming software, application software logic gates and Boolean algebra representation and simplifications by kMap.

Computer Viruses: Introduction, history, types of computer viruses, classification of viruses ways to catch a computer virus, symptoms of a computer virus.

Application of computer: Desktop publishing, sports, design and manufacturing research and design, military, robotics, planning and management, marketing, medicine and health care, arts, communications, scientific, education.

Introduction of internet, history, IP, TCP and UDP, application protocol, world wide web, how the web works, web standards, website, overview, types of websites, electronic mail, internet, e-mail header, saved message file extension, messages and mailboxes, introduction to intranet, uses, advantages, disadvantages.

Introduction to data warehouse, components of a data warehouse, different methods of storing data in a data warehouse, advantages of using data warehouse.

Duration: 3 hours	**Max Marks: 50**

bit-103Office Automation & PC Software

MS-Windows:
Introduction to MS Windows, concept of GUI, windows explorer, control panel, accessories, running applications under MS Windows

Microsoft Word - Word Processing Basics , Features of MS Word ,Typing ,inserting , selecting and deleting Text ,Format Painter ,Find and Replace, Paragraph Attributers , Moving, Copying and Pasting Text ,Columns , Drop Caps , Change Case ,Page Setting ,Illustration, Picture, Shapes, SmartArt, Screenshot ,Create Table ,Table Design View ,Link ,Hyperlink ,Bookmark ,Table Layout ,Comments ,Header & Footers ,Design Tab ,Page Setup & Printing ,Table of Contents ,Footnotes ,Mail Merge ,Review Tab ,View Tab, Document template.

Microsoft Excel - Introducing Excel ,Recognizing Interface Features Unique to Excel , Understanding Workbook Structure ,Navigating through Workbooks ,Making Workbook Selections .The Basics Of Data -Entering Text , Entering Dates & Numbers ,Editing Cell Entries ,Copying & Moving Data, Filling a Series, Managing Workbook Structure - Modifying Workbook & Worksheet Structure, Resizing Worksheet Elements, Hiding Workbook Component ,Workbook Protection, Formatting Cells - Applying Basic Formatting ,Formatting Numbers ,Exploring the Format Cells Dialog Box ,Creating & Applying Cell Styles ,Conditional Formatting, Working With Formulas - Excel Calculations ,Entering Formulas ,Formula Auditing, The Basics Of Functions - Using Basic Functions , Controlling Calculation Options ,Linking Worksheets ,Working With Graphics -Adding Clip Art ,Add an Image From a file, Image Adjustment, Working With Charts - Creating Charts , Modifying Chart Design ,Working with Chart Layout & Format, Working With Hyperlink - Using Bookmark ,External Link ,Sorting, Filtration And Validation - Sorting Data ,Filtering Data ,Data ValidationCustomizing Excel - Customize Tabs, Recording a Macro, Running a Macro.Preparing Files For Distribution - Print Area, Print Titles & Sheet Options, Renaming Sheets & Adding Headers/Footers, Printing Worksheets

Microsoft PowerPoint-Exploring the PowerPoint Interface, Views, Navigation & Keyboard Shortcuts, Setting Options & Saving Files, PowerPoint Design Essentials, Setting Up a New File, Changing Backgrounds, Placeholders & Bullets, Adjusting Placeholders, Adding Headers & Footers, Saving PowerPoint Templates

Duration: 3 hours	**Max Marks: 50**

bit-104C Programming & Data Structure

Overview of C Language: History of C, Character set, C tokens, Identifiers, Keywords,Data types, Variables, Constants, Symbolic Constants , Operators in C, Hierarchy ofOperators, Expressions, Type Conversions and Library Functions.

Managing Input and Output Operation: Formatted and Unformatted I/O Functions,Decision making, branching and looping: Decision Making Statements - if Statement, if–else statement, nesting of if-else statements, else–if ladder, switch statement,?: operator

Looping - while, do-while, for loop, Nested loop, break, continue, and goto statements.Functions: Function Definition, prototyping, types of functions, passing arguments tofunctions, Nested Functions, Recursive functions.

Arrays: Declaring and Initializing, One Dimensional Arrays, Two Dimensional Arrays,Multi-Dimensional Arrays - Passing arrays to functions. Strings: Declaring andInitializing strings, Operations on strings, Arrays of strings, passing strings to functions.Storage Classes - Automatic, External, Static and Register Variables.

Structures-Declaring and Initializing, Nested structure, Array of Structure, PassingStructures to functions, Unions, typedef, enum, Bit fields. Pointers – Declarations,Pointer arithmetic, Pointers and functions, Call by value, Call by reference, Pointers andArrays, Arrays of Pointers, Pointers and Structures. Meaning of static and dynamicmemory allocation, Memory allocation functions.

Data Structures: Arrays, stacks, queues, d-queue, linked lists, single link list, double link list, trees, threaded tree, b-tree, graphs, depth first search, breath first search, kruskal algorithm, prism algorithm, prefix, postfix, infix, in-order, pre-order, post-order, recursive functions.

Sorting: Internal and external sorting, Quick Sort, merge sort, bubble, insertion, selection sorting.

Shortest path, travel salesman problem

Searching techniques and merging algorithms

Duration: 3 hours	**Max Marks: 50**

bit-105Circuit Analysis & Electronic Device

Number Systems and Codes:- Binary, Decimal , Octal, Hexadecimal and their inter-conversions

Codes: BCD, Excess-3, Gray code etc.

Digital electronic signals and switches: - Concept on digital signal, logic levels, Activehigh, Active low signals, Switching Characteristic of Semiconductor diode,Transistor.

Logic Gates: - AND, OR, NOT, NOR, NAND, EX-OR, EX-NOR operations and theirtruth table. Boolean algebra and reduction techniques: - K-Maps and Quine, McClusky.

Arithmetic Operations: - Binary Addition, Subtraction, Multiplication, Division. 2.s Complement Subtraction. Circuits: - Half- Adder, Full Adder, Half Subtracter, FullSubtracter, 2-bit by 2-bit Multiplier , Various Code convertors.

Multiplexers (MUX):- Working of MUX, Implementation of expression using MUX.

Demultiplexers (DEMUX):- Implementation of expression using DEMUX, Decoder.FLIP FLOP s :- Concept of Sequential circuit, S-R, J-K , Preset & Clear, Master .

Slave JK D, T Flip Flops their truth tables and excitation tables, Conversion fromone type to another type of Flip Flop,registers, Logic families and theircharacteristics,characteristic of digital ICs

Duration: 3 hours	**Max Marks: 50**

bit-106Database Management Systems

Object of database systems, data abstraction, data definition language, data manipulation language, database manager, database administrator, tradeoffs between utilities of data and control of data.

Entity relationship model, entities and entity sets their relationship, mapping constraints, generalization, aggregation, use of ER model for the design of databases, implementation tradeoffs of sequential, random, index sequential file organization, relational algebra, relational calculus and normalization up to DKNF

Relational Query Language: DDL, DML, database integrity, domain integrity, entity integrity, referential integrity, security, authorization, access matrix, concurrency, locks, serializability, recovery.

MS-Access: Create a Table in MS Access -Data Types, Field Properties, Fieldsnames, types, properties, default values, format, caption, validationrules Data Entry Add record delete recode and edit text Sort, find/replace,filter/select, re-arrange columns, freeze columns. Edit a Tables- copy, delete, import, modify table structure find replace.

Setting up Relationships- Define relationships, add a relationship, set a rule for Referential Integrity, change the join type, delete a relationship, save relationship Queries & Filter –difference between queries and filter,filter using multiple fields AND,OR,advance filter Queries create Query with one table,fiend record with select query, find duplicate record with query,find unmatched record with query, run query,save and change query.

Introduction to Forms Types of Basic Forms: Columnar, Tabular, Datasheet, Main/Subforms, add headers and footers, add fields to form, add text to form use label option button, check box,combo box, list box Forms Wizard, Create Template.

Introduction to Reports,Types of Basic Reports: Single Column, Tabular Report Groups/Total, single table report multi table report preview report print report, Creating Reports and Labels, Wizard