FACULTY OF COMPUTER SCIENCE & IT

SYLLABUS

of

Bachelor of Science (Information Technology)

(Semester I-VI)

(Under Continuous Evaluation System)
(12+3 System of Education)

Session 2022-23

The Heritage Institution

KANYA MAHA VIDYALAYA JALANDHAR
(Autonomous)

Program Specific Outcomes

Bachelor of Science (Information Technology)
(Session 2022-23)

After completing this program, the students will be able to:

PSO1: Apply skills for development of software and websites for providing efficient solution to IT based problems.

PSO2: Comprehend development process in IT industry through ethical, defined and innovative techniques.

PS03: Achieve leadership role and team player role to be able to work in multidisciplinary areas at various job roles.

PSO4: Identify and demonstrate the implementation of various tools and technologies involved in the field of Information Technology.

PSO5: Demonstrate proficiency in the field of Programming, Web development and IT enabled services.

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

SCHEME AND CURRICULUM OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAMME

Bachelor of Science (Information Technology)

Session 2022-23

Bachelor of Science (Information Technology) Semester – I							
Course Code	Course Name	Course Type	Marks				Examination Time (in Hours)
			Total	Ext.		CA	
				L	P		
BITL-1421 / BITL-1031/ BITL-1431	Punjabi (Compulsory) / [1]Basic Punjabi/ [2]Punjab History and Culture	C	50	40	-	10	3
BITL-1102	Communication Skills in English	C	50	40	-	10	3
BITL-1333	Applied and Discrete Mathematics	C	100	80	-	20	3
BITM-1114	Introduction to Programming – C	C	100	50	30	20	3+3
BITM-1115	Fundamentals of Computers	C	100	50	30	20	3+3
AECD-1161	[*]Drug Abuse: Problem, Management and Prevention (Compulsory)	AC	50	40	-	10	3
SECF-1492	[*]Foundation Course	AC	25	20	-	05	1
	Total		**400**				

Note:

C - Compulsory
AC - Audit Course
[1] Special course in lieu of Punjabi (Compulsory)
[2] Special course in lieu of Punjabi (Compulsory) for those students who are not domicile of Punjab.
*Marks of these courses will not be added in total marks and only grades will be provided.

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

SCHEME AND CURRICULUM OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAMME
Bachelor of Science (Information Technology)

Session 2022-23

<table>
<tr><th colspan="9">Bachelor of Science (Information Technology) Semester – II</th></tr>
<tr><th rowspan="3">Course Code</th><th rowspan="3">Course Name</th><th rowspan="3">Course Type</th><th colspan="4">Marks</th><th rowspan="3">Examination Time (in Hours)</th></tr>
<tr><th rowspan="2">Total</th><th colspan="2">Ext.</th><th rowspan="2">CA</th></tr>
<tr><th>L</th><th>P</th></tr>
<tr><td>BITL-2421 / BITL-2031/ BITL-2431</td><td>Punjabi (Compulsory) / [1]Basic Punjabi/ [2]Punjab History and Culture</td><td>C</td><td>50</td><td>40</td><td>-</td><td>10</td><td>3</td></tr>
<tr><td>BITM-2102</td><td>Communication Skills in English</td><td>C</td><td>50</td><td>25</td><td>15</td><td>10</td><td>3+3</td></tr>
<tr><td>BITL-2113</td><td>Principles of Digital Electronics</td><td>C</td><td>100</td><td>80</td><td>-</td><td>20</td><td>3</td></tr>
<tr><td>BITL-2114</td><td>Numerical Methods and Statistical Techniques</td><td>C</td><td>100</td><td>80</td><td>-</td><td>20</td><td>3</td></tr>
<tr><td>BITM-2115</td><td>Introduction to Object Oriented Programming-I</td><td>C</td><td>100</td><td>50</td><td>30</td><td>20</td><td>3+3</td></tr>
<tr><td>SECM-2502</td><td>*Moral Education</td><td>AC</td><td>25</td><td>20</td><td>-</td><td>05</td><td>1</td></tr>
<tr><td colspan="3" align="center">Total</td><td>400</td><td></td><td></td><td></td><td></td></tr>
</table>

Note:

C - Compulsory
AC - Audit Course
[1] Special course in lieu of Punjabi (Compulsory)
[2] Special course in lieu of Punjabi (Compulsory) for those students who are not domicile of Punjab.
*Marks of these courses will not be added in total marks and only grades will be provided.

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

SCHEME AND CURRICULUM OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAMME

Bachelor of Science (Information Technology)

Session 2022-23

Bachelor of Science (Information Technology) Semester – III							
Course Code	Course Name	Course Type	Marks				Examination Time (in Hours)
			Total	Ext.		CA	
				L	P		
BITL-3111	Computational Problem Solving	C	75	60	-	15	3
BITL-3112	Data Structures	C	75	60	-	15	3
BITL-3113	System Analysis and Design	C	75	60	-	15	3
BITP-3114	Lab on Computational Problem solving	C	50	-	40	10	3
BITP-3115	Lab on Data Structures	C	25	-	20	05	3
AECE - 3221	* Environmental Studies (Compulsory)	AC	100	60	20	20	3
SECP - 3512	*Personality Development	AC	25	20	-	05	1
	Total		**300**				

Note:

   C - Compulsory

   AC - Audit Course

   * Marks of these courses will not be added in total marks and only grades will be provided.

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

SCHEME AND CURRICULUM OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAMME

Bachelor of Science (Information Technology)

Session 2022-23

Course Code	Course Name	Course Type	Marks				Examination Time (in Hours)
			Total	Ext.		CA	
				L	P		
BITL-4111	Database Management System	C	75	60	-	15	3
BITL-4112	Internet Applications	C	75	60	-	15	3
BITL-4113	Object Oriented Programming- II	C	75	60	-	15	3
BITL-4114	E-Business	C	75	60	-	15	3
BITP-4115	Lab on Database Management System	C	25	-	20	05	3
BITP-4116	Lab on Object Oriented Programming - II	C	50	-	40	10	3
BITP-4117	Lab on Internet Applications and Web Designing	C	25	-	20	05	3
SECS - 4522	*Social Outreach	AC	25	-	20	05	1
	Total		**400**				

Note:

    C - Compulsory

    AC - Audit Course

   * Marks of these courses will not be added in total marks and only grades will be provided.

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

SCHEME AND CURRICULUM OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAMME

Bachelor of Science (Information Technology)

Session 2022-23

Course Code	Course Name	Course Type	Marks				Examination Time (in Hours)
			Total	Ext.		CA	
				L	P		
BITL-5111	Computer Networks	C	100	80	-	20	3
BITL-5112	Web Technologies	C	100	80	-	20	3
BITL-5113	Operating System	C	100	80	-	20	3
BITP-5114	Lab on Web Technologies	C	50	-	40	10	3
BITP-5115	Lab on Operating System	C	50	-	40	10	3
SECJ-5551	* Job Readiness Course	AC	25	20	-	05	1
	Total		**400**				

Note:

C – Compulsory

* Marks of these courses will not be added in total marks and only grades will be provided

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

SCHEME AND CURRICULUM OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAMME

Bachelor of Science (Information Technology)

Session 2022-23

<table>
<tr><td colspan="9">Bachelor of Science (Information Technology) Semester - VI</td></tr>
<tr><td rowspan="3">Course Code</td><td rowspan="3">Course Name</td><td rowspan="3">Course Type</td><td colspan="4">Marks</td><td rowspan="3">Examination Time (in Hours)</td></tr>
<tr><td rowspan="2">Total</td><td colspan="2">Ext.</td><td rowspan="2">CA</td></tr>
<tr><td>L</td><td>P</td></tr>
<tr><td>BITL-6111</td><td>Computer Graphics</td><td>C</td><td>75</td><td>60</td><td>-</td><td>15</td><td>3</td></tr>
<tr><td>BITL-6112</td><td>Digital Marketing</td><td>C</td><td>75</td><td>60</td><td>-</td><td>15</td><td>3</td></tr>
<tr><td>BITP-6113</td><td>Lab on Computer Graphics</td><td>C</td><td>50</td><td>-</td><td>40</td><td>10</td><td>3</td></tr>
<tr><td>BITD-6114</td><td>Project</td><td>C</td><td>200</td><td>-</td><td>160</td><td>40</td><td>3</td></tr>
<tr><td></td><td>Total</td><td></td><td>400</td><td></td><td></td><td></td><td></td></tr>
</table>

Note:

C - Compulsory

Session 2022-23
COURSE CODE: BITL–1333
APPLIED AND DISCRETE MATHEMATICS

Course Outcomes:

After passing this course the student will be able to:

CO1: Apply various operations on sets and relations.

CO2: Represents world knowledge in symbolic notation through propositional calculus.

CO3: Apply Boolean algebra to solve problems like minimization, standard form, etc.

CO4: Apply various operations like addition, subtraction, multiplication, inverse, etc on matrices.

Bachelor of Science (Information Technology) Semester- I

Session 2022-23
COURSE CODE: BITL–1333
APPLIED AND DISCRETE MATHEMATICS

Examination Time: 3 Hours.   Max. Marks: 100
                                                                                       Theory: 80
                                                                                       CA: 20

Instructions for Paper Setter -

Eight questions of equal marks (16 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts(not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section

UNIT-I

Sets and Relations: Definition of sets, subsets, complement of a set, universal set, intersection and union of sets, De-Morgan's laws, Cartesian products, Equivalent sets, Countable and uncountable sets, minset, Partitions of sets, Relations: Basic definitions, graphs of relations, properties of relations

UNIT-II

Logic and Propositional Calculus: Proposition and Compound Propositions, basic Logical Operations, Propositions and Truth Tables, Tautologies and Contradictions, Logical Equivalence, Duality law, Algebra of propositions, Conditional and Bi conditional Statements, Arguments, Logical Implication, Propositional Functions, Predicates and Quantifiers, Negation of Quantified Statements, Inference theory of the predicates calculus.

UNIT-III

Boolean Algebra: Boolean algebra and its duality, Duality, Boolean Algebra as Lattices, Boolean identities, sub-algebra, Representation Theorem, Sum-of-Products Form for Sets, Sum of-Products Form for Boolean Algebra, Minimal Boolean Expressions, Prime Implicants, Boolean Functions, Karnaugh Maps.

UNIT-IV

Matrices: Introduction of a Matrix, its different kinds, matrix addition and scalar multiplication, multiplication of matrices, transpose etc. Square matrices, inverse and rank of a square matrix, Matrix Inversion method.

References/Textbooks:

1. Seymour Lipschutz, Marc Lars Lipson, Discrete Mathematics (Schaum's outlines Series), McGraw-Hill, 1997.
2. Bernard Kolman, Robert C. Busby, Discrete Mathematical structures for Computer Science, Prentice-Hall, 1984.
3. Alan Doerr, Kenneth Levasseur, Applied Discrete Structures for Computer Science, Galgotia Publications, 1989.
4. J.P.Tremblay. and R Manohar, Discrete Mathematical Structures with Applications to Computer Science, McGraw-Hill, 1997.

Note: The latest editions of the books should be followed.

Session 2022-23
COURSE CODE: BITM–1114
INTRODUCTION TO PROGRAMMING - C

Course Outcomes:

After passing course the student will be able to:

CO1: Comprehend the working of various programming constructs involved in C Programming.
CO2: Design C program and control its sequence using various control statements.
CO3: Apply programming concepts such as arrays, functions and strings to provide solution in different problem domains.
CO4: Work with pointers, structures and union.

Bachelor of Science (Information Technology) Semester- I

Session 2022-23
COURSE CODE: BITM–1114
INTRODUCTION TO PROGRAMMING - C

Examination Time: (3+3) Hrs.

Max. Marks: 100
Theory: 50
Practical: 30
CA: 20

Instructions for Paper Setter -

Eight questions of equal marks (10 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts(not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section

UNIT-I

Fundamentals: Character set, Identifiers and Key Words, Data types, Constants, Variables, Expressions, Statements, Symbolic Constants.

Operations and Expressions: Arithmetic operators, Unary operators, Relational Operators, Logical Operators, Assignment and Conditional Operators, Library functions. Data Input and Output statements

UNIT -II

Control Statements: Preliminaries, While, Do–while and for statements, Nested loops, If–else, Switch, Break – Continue statements.

Program Structure Storage Class: Storage Classes- Auto, extern, register and static . about library functions.

UNIT-III

Functions: Brief overview, defining, accessing functions, passing arguments to function, specifying argument data types, function prototypes, recursion.

Arrays: Defining, processing an array, passing arrays to a function, multi–dimensional arrays.

Strings: String declaration, string functions and string manipulation.

UNIT - IV

Structures & Unions: Defining and processing a structure, user defined data types, structures and pointers, passing structures to functions, self referenced structure, unions.

Pointers: Fundamentals, pointer declaration, passing pointer to a function, pointer and one dimensional arrays, operation on pointers, pointers & multi–dimensional arrays of pointers, passing functions, other functions, more about pointer declarations.

References/Textbooks:

1. E Balagurusamy, Programming in ANSI C, Tata McGraw-Hill, 2002.
2. Byron Gottfried, Schaum's Outline Programming with C, McGraw Hill, 1996.
3. Brian W. Kernighan, Dennis M. Ritchie, The C Programming language, Prentice Hall, 1988.
4. Stephen G. Kochan, Programming in C, Pearson Education, 2015.

Note: The latest editions of the books should be followed.

Bachelor of Science (Information Technology) Semester- I

Session 2022-23
COURSE CODE: BITM–1115
FUNDAMENTALS OF COMPUTERS

Course Outcomes:

After passing course the student will be able to:

CO1: comprehend about computer hardware, operating system concepts and various system software.

CO2: Identify various input, output and memory devices.
CO3: Apply office automation software to create professional and academic documents and presentations.

CO4: Manage data in a spreadsheet along with its representation through graphs.

Bachelor of Science (Information Technology) Semester- I

Session 2022-23
COURSE CODE: BITM–1115
FUNDAMENTALS OF COMPUTERS

Examination Time: (3+3) Hrs.

Max. Marks: 100
Theory: 50
Practical: 30
CA: 20

Instructions for Paper Setter -

Eight questions of equal marks (10 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts(not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT I

Fundamentals of Computer: Introduction to computer, Applications of computer, Components of computers (Input unit, Output Unit, Memory Unit & CPU).

Software: Application Software, Service software, System software -operating system (Types & Function of OS), Translators (compiler, interpreter, assembler), Booting a System.

UNIT II

Input Devices: Keyboards, Mouse, Joystick, Track Ball, Light Pen and Data Scanning devices (scanner, OCR, OMR, MICR, Bar Code Reader, Card Reader)

Output Devices: Monitor, Printers (laser printer, dot matrix printer, ink jet printer)

Memories: Primary Memory -RAM (Working and Its types), ROM (Types of ROM). Secondary Memory - Hard Disk (Structure of a hard disk, working, concept of tracks, sectors, clusters, cylinders), CD, DVD.

UNIT III

Word Processing: Introduction to Office, word processing & its features, Parts of window of word (Title bar, menu bar, status bar, and ruler), understanding the Ribbon, Use of Office Button and Quick Access Toolbar, Creation of new documents, opening document, insert a document into another document. Page setup, margins, gutters, font properties, Alignment, page breaks, header & footer, deleting, moving, replace, editing text in document, saving a document, spell checker, printing a document. Creating a table, entering and editing, Text in tables. Changing format of table, height, width of row/column. Editing, deleting Rows,

columns in table. Adding picture, page colors and Watermarks, Borders, shading, Templates, wizards, drawing objects.

Presentation: Introduction to PowerPoint, Exploring menus, starting a new slide, saving presentation, moving/rearranging slides, printing slides. Applying theme to presentation, Views (slide View, slide sorter, notes view, outline view), Formatting & enhancing text formatting. Displaying slide show, adding multimedia. Slide transitions, applying Animation, Timing slide display, adding movies & sounds.

UNIT IV

Spreadsheet: Introduction to Worksheet/Spreadsheet, Features of excel, Describe the excel Window, Creating a new workbook, different functions on different data in excel, creation of graphs, editing it and formatting, creation of worksheet, adding, deleting, moving the text in worksheet, sorting the data, querying the data, filtering the data (auto and advance filters), To open an already existing workbook, Saving workbook, printing a worksheet, Closing the workbook & exiting.

References/Textbooks:

1. Joyce Cox, Joan Lambert and Curtis Frye, Microsoft office Professional 2010 Step by Step, Microsoft Press, 2010.
2. V. Rajaraman, NeeharikaAdabala, Fundamentals of Computers, PHI Learning, 2015.
3. P.K. Sinha, Computer Fundamentals, BPB Publications, 2004.
4. Anshuman Sharma, A book of Fundamentals of Information Technology, Lakhanpal Publishers, 5th Edition.
5. Peter Norton, Peter Norton's Computing Fundamentals, McGraw-Hill Technology Education, 2006.

Note: The latest editions of the books should be followed.

Bachelor of Science (Information Technology) Semester- II
(Session 2022-23)
COURSE CODE: BITL–2113
PRINCIPLES OF DIGITAL ELECTRONICS

Course Outcomes:

After the completion of this course, the student will be able to:

CO1: Comprehend and apply the number systems.

CO2: Apply K-map for simplification of Boolean expressions and implement them with Logic Gates.

CO3: Design advanced and complex combinational and sequential circuits.

CO4: Demonstrate the internal structure of semiconductor memory.

Bachelor of Science (Information Technology) Semester- II
(Session 2022-23)
COURSE CODE: BITL–2113
PRINCIPLES OF DIGITAL ELECTRONICS

Examination Time: 3 Hours   Max. Marks: 100
                                                                        Theory:80
                                                                        CA:20

Instructions for Paper Setter -

Eight questions of equal marks (16 marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts(not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section

UNIT-I
Number System: Introduction, number conversion system , binary arithmetic, representation of signed binary numbers, 1's and 2's complement, Codes: straight binary code, BCD Code Excess3 Code, Grey Code ASCII, Integer and floating point representation

UNIT-II
Logic Gates and Boolean Algebra: Logic gates, Universal Gates, Boolean algebra and Minimization techniques, canonical forms of Boolean expressions, K-Map

UNIT- III
Combinational Circuits: Adder, Subtracter, Multiplexer, Demultiplexer, Decoder, Encoder
Sequential Circuits: Flip-flops, clocks and timers, registers, counter

UNIT-IV
Semiconductor memories: Introduction, Static and dynamic devices, read only & random access memory chips, PROMS and EPROMS Address selection logic. Read and write control timing diagrams for ICs

References / Textbooks:

1. M. Morris Mao, Digital Design, Pearson Publication (2018), 6th Edition.
2. Ronald J. Tocci, Digital Systems, Pearson (2009), 10th Edition.
3. Morris Mano, Digital Logic and Computer Design, Pearson Education (2004), 1st Edition.
4. V.K. Jain, Arti Agarwal, Digital Electronics, Genius Publications Pvt. Ltd. (2018), 1st Edition

5. K. Meena, Principles of Digital Electronics, Prentice Hall India Learning Private Limited (2009), 1st Edition

6. William H. Gothmann, Digital Electronics: An introduction to Theory and Practice, Prentice Hall India Learning Private Limited (1982), 2nd Edition

Bachelor of Science (Information Technology) Semester- II
(Session 2022-23)
COURSE CODE: BITL–2114
NUMERICAL METHODS AND STATISTICAL TECHNIQUES

Course Outcomes:

After the completion of this course, the student will be able to:

CO1: Solve non-linear and linear equations using different methods.

CO2: Comprehend interpolation and numerical integration.

CO3: Calculate different means and deviations using statistical techniques.

CO4: Comprehend correlation, curve fitting and regression for finding solutions to various statistical problems.

Bachelor of Science (Information Technology) Semester- II
(Session 2022-23)
COURSE CODE: BITL–2114
NUMERICAL METHODS AND STATISTICAL TECHNIQUES

Examination Time: 3
Hours

Max. Marks: 100
Theory:80
CA:20

Instructions for Paper Setter -

Eight questions of equal marks (16 marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts(not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section. Students can use non-programmable and non-storage type scientific calculator.

UNIT-I
Introduction: Numerical Methods, Numerical methods versus numerical analysis, Errors and Measures of Errors.
Non–linear Equations: Bisection Method, False Position method and Newton Raphson's Method
Linear Equations: Direct Method - Gauss Elimination Method, Gauss Jordan Method, Iterative method – Gauss Seidal Method.

UNIT-II
Interpolation: Lagrange's method, Newton's Methods: Forward Difference Method, Backward Difference Method Divided Difference Method.
Numerical Integration: Trapezoidal Rule, Simpson's 1/3 method and Simpson's 3/8 Method

UNIT-III
Statistical Techniques:
Measure of Central Tendency: Arithmetic mean, Geometric Mean, Harmonic Mean, Median, Mode.
Measures of dispersion: Range, Quartile Deviation, Mean deviation, Standard deviation, Co–efficient of variation.

UNIT –IV
Correlation: Introduction, Karl Pearson's Coefficient of Correlation, Rank Correlation
Regression: Regression line and regression equations, Regression Coefficient
Curve Fitting: Fit a polynomial equation, Fit an exponential curve, Geometric Curve, Logarithmic curve

References / Textbooks:

1. AmrinderPalSngh, Jaspal Singh, Anshuman Sharma, Fundamentals Of Numerical Methods And Statistical Techniques, Lakhanpal Publishers, 4th edition.
2. Kandasamy P.& et AI., Numerical Methods, S. Chand & Company (2006), Reprint Edn. 2006 Edition.
3. B.S. Grewal, Numericals Methods in Engineering & Science, Khanna Publishers (2013), 11th Edition.
4. E. Balagurusamy, Numerical Methods, Tata McGraw Hill Education (2017)
5. H.S.G. Rao, Numerical Methods, IK International Publishing House (2011)
6. S.S. Sastry, Introductory methods of Numerical Analysis, PHI (2012), 5th Edition

Bachelor of Science (Information Technology) Semester- II
(Session 2022-23)
COURSE CODE: BITM–2115
INTRODUCTION TO OBJECT ORIENTED PROGRAMMING - I

Course Outcomes:

After the completion of this course, the student will be able to:

CO1: Comprehend the concepts of Object Oriented Programming Paradigm.

CO2: Identify the use of access specifiers and different types of constructors in class.

CO3: Apply function and operator overloading.

CO4: Comprehend different types of inheritance and polymorphism.

Bachelor of Science (Information Technology) Semester- II
(Session 2022-23)
COURSE CODE: BITM–2115
INTRODUCTION TO OBJECT ORIENTED PROGRAMMING - I

Examination Time: (3+3) Hrs   **Max. Marks: 100**
                                                                        Theory:50
                                                                     Practical: 30
                                                                            CA:20

Instructions for Paper Setter -

Eight questions of equal marks (10 marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts(not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section

UNIT-I

Programming Paradigms: Introduction to the object oriented approach towards programming by discussing Traditional, Structured Programming methodology.

Objects & Classes: Object Definition, Instance, Encapsulation, Data Hiding, Abstraction, Inheritance, Messages, Method, Polymorphism, Classes.

UNIT-II
Object Oriented Programming using C++: Characteristics of OOP, Overview of C++, I/O using cout and cin, Objects and Classes, Member functions and data, private & public, constructor & destructor, Constructor Overloading, Types of Constructors.

UNIT-III
Function Overloading: Function Overloading, Default Arguments, Ambiguity in Function Overloading.
Operator Overloading: Overloading unary and binary operators, Type Conversion using Operator Overloading

UNIT -IV
Inheritance: Concept of inheritance, Base & derived classes, Access Specifiers, Class Hierarchies, Types of Inheritance with examples.
Virtual Functions and Polymorphism: Virtual functions, friend functions, static function, this pointer, polymorphism, Types of Polymorphism with examples, templates, class templates.

References / Textbooks:

1. HerberttSchildt, C++: The Complete Reference, Tata McGraw-Hill Education India, 4th Edition.
2. Bjarne Stroustrup, The C++ Programming Language, Addison – Wesley Professional (2013), 4th Edition

3. Bjarne Stroustrup, A Tour of C++ (C++ In-Depth Series), Addison – Wesley Professional (2018), 2nd Edition
4. G.S. Baluja, C++ Program Design (w/CD), Khanna Book Publishing Company (2015), 2nd edition.
5. Stanley Lippman, Josee Lajoie, Barbara Moo, C++ Primer, Addison-Wesley Professional (2012), 5th edition.
6. Richard Johnsonbaugh and Martin Kalin, Object Oriented Programming in C++, Pearson Education (1999), 2nd Edition

Session 2022-23
COURSE CODE: BITL–3111
COMPUTATIONAL PROBLEM SOLVING

Course Outcomes:

After passing course the student will be able to:

CO1: Comprehend basics of Python programming like operators, data types, control structures, etc.

CO2: Apply list and directories for handling and accessing data through iterations.

CO3: Implement various built-in and user defined function to solve mathematical problems.

CO4: Comprehend Object Oriented Programming and modules in Python.

Bachelor of Science (Information Technology) Semester – III

Session 2022-23
COURSE CODE: BITL–3111
COMPUTATIONAL PROBLEM SOLVING

Examination Time: 3 Hours.   Max. Marks: 75
                                                                  Theory: 60
                                                                  CA: 15

Instructions for Paper Setter -

Eight questions of equal marks (12 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT- I

Introduction to Problem solving using Python: Process of Computational Problem Solving, Python Programming Language.

Data and Expressions: Literals, Variables and Identifiers, Operators, Expressions, Statements and Data Types.

Control Structures: Boolean Expressions (Conditions), Logical Operators, Selection Control, Nested conditions, Debugging.

UNIT- II

Lists: List Structures, Lists (Sequences) in Python, Iterating Over Lists (Sequences) in Python.

Iteration: While statement, Definite loops using For, Loop Patterns, Recursive Functions, Recursive Problem Solving, Iteration vs. Recursion.

Dictionaries: Dictionaries and Files, Looping and dictionaries, Advanced text parsing.

UNIT- III

Functions: Fundamental Concepts, Program Routines, Flow of Execution, Parameters & Arguments.

Files: Opening Files, Using Text Files, String Processing, Exception Handling.

UNIT- IV

Objects and Their Use: Introduction to Object Oriented Programming.

Modular Design: Modules, Top-Down Design, Python Modules.

Using Databases and SQL: Database Concepts, SQLite Manager Firefox Add-on, SQL basic summary, Basic Data modeling, Programming with multiple tables.

References/Textbooks:

1. Charles Severance, Python for Informatics, Version 0.0.7.
2. Charles Dierbach, Introduction to Computer Science Using Python: A Computational Problem-Solving Focus, Wiley Publications, 2012.
3. Guttag John V, Introduction To Computation And Programming Using Python, PHI, 2014.
4. Jeeva Jose and Sojan P. Lal, Introduction to Computating& Problem Solving Through Python, Khanna Publishers, 2015.
5. Mark J. Guzdial, Introduction to Computing and Programming in Python, Pearson Education, 2015.
6. Kenneth Lambert, Fundamentals of Python, Course Technology, Cengage Learning, 2015
7. Mark Lutz, Learning Python, O'Reilly Media, 2013

Note: The latest editions of the books should be followed.

Bachelor of Science (Information Technology) Semester – III

Session 2022-23
COURSE CODE: BITL–3112
DATA STRUCTURES

Course Outcomes:

After passing course the student will be able to:

CO1: Analyze complexity of algorithms to determine their efficiency.

CO2: Comprehend various hashing method, sorting and searching algorithms.

CO3: Comprehend various operations of stack and queue along with different scenarios.

CO4: Comprehend advanced data structures such as tree and graph.

Bachelor of Science (Information Technology) Semester – III

Session 2022-23
COURSE CODE: BITL–3112
DATA STRUCTURES

Examination Time: 3 Hours.

Max. Marks: 75
Theory: 60
CA: 15

Instructions for Paper Setter -

Eight questions of equal marks (12 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT-I

Basic Data Structure: Introduction to elementary Data Organization, Common Operation on Data Structures, Algorithm Complexity, Big O Notation, Time – Space tradeoff between Algorithms.

Arrays: Array Defined, Representing Arrays in Memory, Various Operations on Linear Arrays, Multidimensional Arrays.

UNIT-II

Sorting and Searching: Sorting Algorithms, Bubble Sort, Insertion Sort, Selection Sort, Merge Sort, Searching Algorithms, Linear Search and Binary Search.

Hashing: Hash Functions, Division Method, MidSquare Method, Folding Method.

Linked Lists Types of Linked Lists, Representing Linked Lists in Memory, Advantages of using Linked Lists over Arrays, Various Operations on Linked Lists.

UNIT-III

Stacks: Description of STACK structure, Implementation of Stack using Arrays and Linked Lists, Applications of Stacks – Converting Arithmetic expression from infix notation to polish and their subsequent evaluation, Quicksort Technique to sort an array.

Queues: Description of queue structure, Implementation of queue using arrays and linked lists, Description of priorities of queues, Dequeues.

UNIT-IV

Trees: Description of Tree Structure and its Terminology, Binary Trees and Binary Search Trees and their representation in Memory, Heapsort.

Graphs: Description of Graph Structure, Implement Graphs in Memory using Adjacency Matrix, Path Matrix, graph traversal techniques - DFS, BFS.

References/Textbooks:

1. Seymour Lipschutz, Data Structures, Schaum's OutlineSeries, McGraw Hill Company, 2013.
2. Aaron M. Tenenbaum, Data Structures usingC, Pearson Education, 1990.

Note: The latest editions of the books should be followed.

Session 2022-23
COURSE CODE: BITL–3113
SYSTEM ANALAYSIS AND DESIGN

Course Outcomes:

After passing course the student will be able to:

CO1: Gather data to analyze and specify the requirements of a system.

CO2: Comprehend various system analysis and design processes.

CO3: Identify different types of testing and involved documentation.

CO4: Comprehend implementation of system along with its maintenance.

Bachelor of Science (Information Technology) Semester – III

Session 2022-23

COURSE CODE: BITL–3113
SYSTEM ANALYSIS AND DESIGN

Examination Time: 3 Hours.   Max. Marks: 75
                                                                                    Theory: 60
                                                                                    CA: 15

Instructions for Paper Setter -

Eight questions of equal marks (12 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT–I

System Planning and Analysis: Introducing System Analysis and Design, SA&D Concepts, Qualifications and Responsibilities of System Analyst as an agent of change, Systems development life cycle and role of different stages Determining Feasibility, types of feasibility, Feasibility Study.

Information Requirements analysis: Sampling and investigating data through Interviews and Questionnaires, use of Structured English, Decision tables .

UNIT–II

System Analysis Process: Using data flow diagrams, data dictionaries, describing Process specifications and system proposal

System Design: Architectural Design, User Interface Design, Data Design, Module specifications, Module coupling and cohesion, Top-down and bottom-up design,

UNIT–III

Tools for Structured design and System design considerations.

System Development and Testing: Introduction to testing and its types, Types of Documentation and Documentation Tools.

System Implementation: Quality Assurance, Managing system implementation, Transition to new system. Different modes for training users.

System Maintenance: Concept of maintenance and its importance, compare and contrast different types of maintenance.

References/Textbooks:

1. Marvin R. Gore and John W. Stubbe, Elements of System Analysis, Dubuque, Iowa Wm.C. Brown 1988.
2. Thapliyal M.P., System Analysis and Design, JBD Publisher, 2002.
3. Hoffer, Modern Systems Analysis and Design, George and Valacich, Pearson, 2014.
4. Dorny C. Nelson, Understanding Dynamic System: Approaches to Modelling, Analysis and Design, Pearson, 1993.
5. Perry Edwards, System Analysis and Design, McGraw-Hill, 1993.
6. Elias M. Awad, System Analysis and Design, Galgotia Publications, 1997.
7. James A. Senn, Analysis and Design of Information Systems, McGraw-Hill, 1989.
8. Silver and Silver, System Analysis and Design, Addison Wesley, Last Edition

Note: The latest editions of the books should be followed.

COURSE CODE: BITP–3114
LAB ON COMPUTATIONAL PROBLEM SOLVING

Examination Time: 3 Hours.   **Max. Marks: 50**
                                                                    Practical: 40
                                                                    CA: 10

Lab–I: Lab on computational problem solving.

Bachelor of Science (Information Technology) Semester- III

Session 2022-23

COURSE CODE: BITP–3115
LAB ON DATA STRUCTURES

Examination Time: 3 Hours.   **Max. Marks: 25**
Practical: 20
CA: 05

Lab – II: Lab on Data Structures.

COURSE CODE: BITL–4111

DATABASE MANAGEMENT SYSTEM

Course Outcomes:

After the completion of this course, the student will be able to:

CO1: Understand data, database and database models.

CO2: Apply relational algebra and relational calculus for performing queries of different types.

CO3: Gain knowledge of normalization and transaction control.

CO4: Create, manage and access database using SQL and PL/SQL.

Bachelor of Science (Information Technology) Semester- IV
(Session 2022-23)

COURSE CODE: BITL–4111

DATABASE MANAGEMENT SYSTEM

Max. Marks: 75
Theory: 60
CA: 15

Examination Time: 3 Hours

Instructions for Paper Setter -

Eight questions of equal marks (12 marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT-I

Introduction to data, field, record, file, database, database management system. Structure of database system, Advantages and disadvantages, levels of database system, Relational model, Hierarchical model, Network model, comparison of models, different keys used in a relational system, DBA and responsibilities of DBA.

UNIT-II

Codd's Rules, E–R diagram, Relational algebra, Relational calculus – Domain and Tuple relational Calculus.

UNIT-III

Introduction to Normalization : Need and advantages of Normalization, INF, 2NF, 3NF, BCNF, 4NF and 5NF.

Introduction to Transaction Management– ACID properties, concurrency control and its management, protection, security, recovery of database.

UNIT-IV

SQL: Introduction to SQL–DDL, DML, DCL, Join methods & sub query, Union Intersection, Minus, Built in Functions, Views, Security amongst users, Sequences, Indexing.

Introduction to PL/SQL: Cursors– Implicit & Explicit, Procedures, Functions & Packages Database Triggers.

Big Data: Introduction to Big Data and Analytics, Introduction to NoSQL.

References / Textbooks:

1. C.J. Date, Introduction to Database System, Pearson Education (2003), 8th Edition
2. RamezElmasri and ShamkantNavathe, Fundamentals of Database Systems, Pearson Education (2015), 7th Edition
3. Abraham Silberschatz, Henry F. Korth, S. Sudarshan, Database System Concepts, McGraw Hill Education (2019), 7th Edition
4. P.S. Deshpande, SQL & PL / SQL for Oracle 11g, Dreamtech Press (2011)
5. Mahesh Mali, Database Management System for Engineering, TechKnowledge Publication, 2020
6. Raghu Ramakrishnan and Johannes Gehrke, Database Management System, McGraw Hill Education (2014), 3rd Edition
7. Rajiv Chopra, Database Management Systems, S. Chand Publishers (2016), 5th Edition

COURSE CODE: BITL–4112

INTERNET APPLICATIONS

Course Outcomes:

After passing course the student will be able to:

CO1: Comprehend basics of internet and email along with their effective use.

CO2: Apply HTML for development of static webpages.

CO3: Implement styling and behavior in webpages through the use of CSS and JavaScript.

CO4: Create and manage websites through the application of WordPress content management system.

Bachelor of Science (Information Technology) Semester- IV
(Session 2022-23)

COURSE CODE: BITL–4112

INTERNET APPLICATIONS

Max. Marks: 75
Theory: 60
CA: 15

Examination Time: 3 Hours

Instructions for Paper Setter -

Eight questions of equal marks (12 marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT-I

Introduction: About Internet and its working, Business use of Internet, services offered by Internet, evaluation of internet, internet service provider (ISP), windows environment for dial up networking (connecting to internet), audio on Internet, Internet addressing (DNS) and IP addresses), Search engine and its working, Intranet and Extranet

E–Mail Basics: Introduction, Advantage and disadvantage, structure of an e–mail message, working of e–mail (sending and receiving messages), managing e–mail (creating new folder, deleting messages, forwarding messages, filtering messages).

UNIT-II

Internet Protocol: Introduction, file transfer protocol (FTP), Gopher, Telnet, other protocols like HTTP and TCP/IP. WWW and its working.

Web Development: HTML – Basics, Text Formatting, font, entities, Links, Images and Image maps, Forms, Form labels, Fieldset/legend, Tables, Frames, Backgrounds / colors, Style / layout, Media. HTML declaratives - head section, Meta tags, scripts, declarations, document types.

UNIT-III

CSS: Introduction, Stylesheets, Syntax, Classes & ID's, Background, Text properties, Box model, Font properties, list, border, margin, padding, table, Class properties, Position properties, Links

JavaScript: Basics, variables, Functions, popup boxes, Conditions and loops, arrays, objects, strings, events, errors, DOM, elements, cookies

UNIT-IV

WordPress: Installation, Configuration, Management - Managing Posts, comments, pages, categories, Plugins, Widgets, Tags, images, users, Import and export content, Updating WordPress. Useful Plugins – MailChimp, Creating Gallery, Stripe Checkout, Verified Authorship, Google Maps, Google Analytics, Live Chat and Social Profile Widget

References / Textbooks:

1. Anshuman Sharma, Fundamentals of Internaet Applications, Lakhanpal Publications (2016)

2. Ikvinderpal Singh, Internet Applications, Khanna Book Publishing Company (2011), 1st Edition

3. P. Rizwan Ahmed, Internet & its Applications, Margham Publications (2013)

4. Douglas E. Corner, Computer Networks and Internet with Internet Applications, Pearson (2008), 4th Edition

5. Satish Jain/Vineeta Pillai, Wireless Communication & Networking made Simple, BPB Publishers (2007)

6. Laura Lerney, Rafe Colburn, Jennifer Kyrnin, Mastering HTML, CSS &Javascript Web Publishing, BPB Publishers (2016), 1st Edition

Bachelor of Science (Information Technology) Semester- IV
(Session 2022-23)

COURSE CODE: BITL–4113

OBJECT ORIENTED PROGRAMMING- II

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand the basic fundamentals of Object Oriented Programming using Java.

CO2: Identify the use of inheritance, interfaces and packages in Java.

CO3: Identify the utilization of multithreading and Exception handling.

CO4: Connect Java application with an existing database and access it through JDBC.

COURSE CODE: BITL–4113

OBJECT ORIENTED PROGRAMMING- II

Max. Marks: 75
Theory: 60
CA: 15

Examination Time: 3 Hours

Instructions for Paper Setter -

Eight questions of equal marks (12 marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT - I

JAVA BASICS: Introduction to Java, Features of Java, Structure of a Java Program, primitive data types, keywords, Identifiers, literals, operators and comments.

OOPS: Object oriented concepts Advantage of OOPs, Objects and Classes,

Strings: Declaring a string, Immutable string, string comparison, concatenation, substring, string tokenizer.

UNIT - II

Inheritance: what is inheritance, types of inheritance, static import, Method overloading, method overriding, Runtime polymorphism, super keyword, final keyword

Interfaces: Abstract classes, declaring an interface, relationship between classes and interface, interface inheritance, implementing multiple inheritance using interface

Packages: what are packages, advantages of using packages, accessing package from another package, subpackaging, running packages by setting path and classpath.

UNIT - III

Exception Handling: what is exception handling, checked and unchecked exceptions, try-catch, try-multiple catch, try – finally, throw and throws

Multithreading: What is a thread, life cycle of a thread, creating a thread, sleeping a thread, joining a thread, thread priority

UNIT - IV

Input/Output: File input stream, File output stream, Buffered output stream, Buffered input stream.

Database connectivity: JDBC, JDBC drivers, steps to connect to the database, connectivity with MYsql.

References/Textbooks:

1. HurbertSchildt, Java The Complete Reference, Tata McGraw Hill, 2014.
2. Y. Daniel Liang, Introduction to Java Programming, Pearsons Publications, 2015.
3. Jon Duckett, Beginning Web Programming with HTML, XHTML, and CSS, John Wiley & Sons, 2004.
4. Thomas A. Powell, HTML & CSS: The Complete Reference, McGraw-Hill, 2010.

Note: The latest editions of the books should be followed.

COURSE CODE: BITL–4114

E-BUSINESS

Course Outcomes:

After passing this course student will be able to:

CO1: Comprehend the basic terms of E-Commerce, aims, benefits and E-Commerce models.

CO2: Acquaint about the working and components of EDI.

CO3: Identify Electronic Payment systems, various issues involved in relation to secure electronic transactions and various E-Payment options.

CO4: Comprehend BPR and Case Studies of E-Business related applications.

COURSE CODE: BITL–4114

E-BUSINESS

Examination Time: 3   **Max. Marks: 75**
Hours   **Theory: 60**
                                                          CA: 15

Instructions for Paper Setter -

Eight questions of equal marks (12 marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT – I

Introduction to E – Commerce: Meaning and Concept, Features, Benefits, E-Commerce v/s. Traditional Commerce. E-Commerce Framework, VAN and EDI as Promoters. E-Commerce Models.

Steps involved in opening your own online business, Role of Website and the technologies needed to build a website.

UNIT - II

EDI: EDI Vs Traditional Systems, components and working of EDI system, EDI implementation issues, Factors for successful EDI Implementation, EDI service providers in India.

UNIT – III

Concerns for E – Commerce: Legal and regulatory issues, Laws for E – Commerce, E-Commerce in India, Sections of IT Act for E-Commerce transactions.

Electronic Payment Systems: Various Methods of Electronic Payments – Google pay, Paytm, Debit and Credit Cards, UPI. E-Commerce security Issues and Measures.

UNIT – IV

Re – Engineering for Change: Business process re – engineering (BPR), Methodology and Planning Methods for change.

Case Studies: To demonstrate usefulness of E – Commerce in various business areas like Banks, Reservations, E–Governance and E-Retailing.

References / Textbooks:

1. Chaffey, E-Business and E-Commerce Managemet: strategy, Implementation and Practice, Pearson Education India (2013), 5th Edition

2. Kenneth C. Laudon and Carol Guercio Traver, E-Commerce, Pearson (2018), 13th Edition

3. S.J. P.t. Joseph, E-Commerce: An Indian Prespective, PHI Learning Pvt. Ltd. (2019), 6th Revised Edition

4. Shruti Mathur, Ecommerce, Pinnacle Learning (2020)

5. David Whiteley, E-Commerce: Strategy, Technologies and Applications, McGraw Hill Education (2017).

6. Nidhi Dhawan, A handbook of E-Commerce, Sun India Publications (2017)

7. Laudon, Kenneth C and Carol Guercio Traver, E–Commerce business. Technology Pearson Education Delhi (2011).

Bachelor of Science (Information Technology) Semester- IV
(Session 2022-23)

COURSE CODE: BITP–4115

LAB ON DATABASE MANAGEMENT SYSTEM

Max. Marks: 25
Practical: 20
CA: 05

Examination Time: 3 Hours

Lab on Database Management System.

Bachelor of Science (Information Technology) Semester- IV
(Session 2022-23)

COURSE CODE: BITP–4116

LABON OBJECT ORIENTED PROGRAMMING- II

Max. Marks: 50
Practical: 40
CA: 10

Examination Time: 3 Hours

Lab on Object Oriented Programming – II.

COURSE CODE: BITP–4117

LAB ON INTERNET APPLICATIONS AND WEB DESIGNING

Max. Marks: 25
Practical: 20
CA: 05

Examination Time: 3 Hours

Lab on Internet Applications

Bachelor of Science (Information Technology) Semester – V

Session 2022-23
COURSE CODE: BITL-5111
COMPUTER NETWORKS

Course Outcomes:

After passing course the student will be able to:

CO1: Describe the functions of each layer in OSI and TCP/IP model.

CO2: Identify various network devices and the layers on which it operates.

CO3: Describe the Data Link layer and Network layer design issues.

CO4: Comprehend the functioning of Transport layer and Application layer protocols.

Session 2022-23
COURSE CODE: BITL-5111
COMPUTER NETWORKS

Examination Time: 3 Hours.   Max. Marks: 100
                                                                                  Theory: 80
                                                                                  CA: 20

Instructions for Paper Setter -
Eight questions of equal marks (16 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT – I

Introduction: Basic concepts of Computer Networks, Basic Components of a Network, Network types and topologies.

Models: OSI Reference Model, TCP/IP Model, Comparison between TCP/IP and OSI model

Transmission Media: Coaxial Cable, Twisted Pair Cable, Fiber Optics &Satellites.

UNIT – II

Network Devices: Hub, Switch, Repeaters, Bridges, Routers, Gateways.

Introduction to Analog and Digital Transmission: Telephone system, Modems, Types of modems, pulse code modulation. Multiplexing and its types, Circuit Switching, Packet Switching, Message Switching.

UNIT - III
Data Link Layer Design Issues: Framing, Error Control, Flow Control, Error Detection & Correction
Media Access Protocols: ALOHA, CSMA, CSMA/CD, CSMA/CA. IEEE standards 802: Token Bus, Token Ring, FDDI.

Design Issues of Network Layer: Routing, IPv4: Notation, Classful addressing, Header Format, IPv6 addressing.

UNIT – IV
Design issues of Transport Layer: TCP, UDP
Network Security and Privacy: Brief Introduction to Cryptography.

References/Textbooks:

1. Tanenbaum , A.S., Computer Networks, Prentice Hall, 2010.
2. Stallings, W., Local Networks: An Introduction: Macmillan Publishing Co, 1990.
3. Stallings W., Data and Computer Communications, Prentice Hall, 2011.
4. Forouzan B., Data Communications and networking, McGraw Hill, 2007.

Note: The latest editions of the books should be followed.

Session 2022-23
COURSE CODE: BITL-5112
WEB TECHNOLOGIES

Course Outcomes:

After passing course the student will be able to:

CO1: Develop user interface of single page website through React.

CO2: Apply PHP as server side scripting language for control of flow, file handling, cookie and session handling, database interactions, etc.

CO3: Comprehend the application of XML, AJAX, JQuery and REST.

CO4: Comprehend the process of web hosting and incorporation of emerging web technologies.

Session 2022-23
COURSE CODE: BITL-5112
WEB TECHNOLOGIES

Examination Time: 3 Hours.

Max. Marks: 100
Theory: 80
CA: 20

Instructions for Paper Setter -

Eight questions of equal marks (16 Marks) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT I

ES6 – Variables, Arrow functions, Class and Inheritance.

Introduction to React - Render HTML, JSX.

React Components – Class, Function, Constructor, Nested Component, Lifecycle of React Components

Data Handling – Props, Props Validation, State, Form and Event Handling in React, Fetching Data through API.

UNIT – II

Introduction to Server Side Scripting using PHP - Basics, Control Statement, Array, Functions.

Core PHP Concepts -Superglobals, Form Handling, PHP Include, Sessions, PHP File Handling, File Upload, Cookies, Error Handling, Exception Handling. Access MySQL Database in PHP.

Introduction to OOPs in PHP – Classes, Object, Constructor, Inheritance.

UNIT – III

XML – Basics, Structure, Namespace, Parsing.

AJAX – Fetching response from server (Textual and XML form), Basics of JQuery.

Introduction to REST

UNIT IV

Hosting - Overview of Domain, Hosting, SSL Certificates and steps to host a website.

Introduction to Emerging Web Technologies - Introduction to Chatbot, Artificial Intelligence and Machine Learning basics used in websites.

References / Textbooks:

1. Jeffery C Jackson, "Web Technology- A Computer Science perspective", Pearson Education, 1st Edition, 2007.
2. Chris Bates, "Web Programming- Building Internet Applications", Wiley India, 1st Edition, 2006.
3. Achyut S Godbole and Atul Kahate, "Web technologies", Tata McGraw Hill, 1st Edition, 2008.
4. Web Technologies, Uttam K Roy, Oxford University Press, 1st Edition, 2010.
5. Kirupa Chinnathambi, Learning React, Addison-Wesley Professional, 1st Edition, 2019.
6. Alex Banks, Eve Porcello, Learning React: Functional Web Development with React and Redux, O'Reilly Media, 1st Edition, 2017.

Note: The latest editions of the books should be followed.

Bachelor of Science (Information Technology) Semester – V

Session 2022-23
COURSE CODE: BITL-5113
OPERATING SYSTEM

Course Outcomes:

After passing course the student will be able to:

CO1: Describe, contrast and compare different types of Operating System.

CO2: Understand the process synchronization policies and CPU scheduling.

CO3: Describe and analyze the memory management and its allocation policies.

CO4: Comprehend about the application of virtual memory and disk scheduling.

Bachelor of Science (Information Technology) Semester – V

Session 2022-23
COURSE CODE: BITL-5113
OPERATING SYSTEM

Examination Time: 3 Hours.   Max. Marks: 100
                                                                                    Theory: 80
                                                                                    CA: 20

Instructions for Paper Setter -
Eight questions of equal marks (16 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT – I
Introduction: Definition, Batch Processing, Multi programming, Time Sharing Systems, Multitasking, multiprocessing, Parallel Systems, Distributed Systems, Real–time Systems.
Processes: Process Concepts, Process Scheduling, Threads, System Calls.

UNIT - II
CPU–Scheduling: Basic concepts, Scheduling Criteria, Scheduling Algorithms, Algorithm Evaluation: Response Time, Turnaround Time, Waiting Time, Throughput.
Process Synchronization: Critical-section problem, semaphores and its Types (Binary and Counting), Classical problems of synchronization and their solutions.

UNIT – III
Deadlocks: System Model, Deadlock characterization, Methods for handing deadlocks, Deadlocks Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock, Approach to Deadlock handling.
Memory Management: Background, Logical v/s Physical Address Space, Swapping, Continuous Allocation, Paging, Segmentation.

UNIT – IV
Virtual Memory: Background, Page Fault, Demand Paging, Page Replacement, Page Replacement Algorithms, Thrashing.
Secondary Storage Structures: Disk structures, Disk scheduling.

References/Textbooks:

1. Avi Silberschatz, Peter Baer Galvin, Greg Gagne, Operating System Concepts, Wiley, 2013.

2. Charles Crowley, Operating Systems: A Design-Oriented Approach , Tata McGraw Hill, 2001.

3. Deitel, An Introduction to Operating Systems, Second Edition, Addison Wesley, 1990.

4. William Stallings, Operating Systems: Internals and Design Principles, Pearson Education Limited, 2014.

Note: The latest editions of the books should be followed.

Bachelor of Science (Information Technology) Semester – V

Session 2022-23
COURSE CODE: BITP-5114
LAB ON WEB TECHNOLOGIES

Examination Time: 3 Hours.   **Max. Marks: 50**
                                                                  Practical: 40
                                                                  CA: 10

Lab on Web Technologies.

Bachelor of Science (Information Technology) Semester – V

Session 2022-23
COURSE CODE: BITP-5115
LAB ON OPERATING SYSTEM

Examination Time: 3 Hours.   **Max. Marks: 50**
                                                                                    Practical: 40
                                                                                    CA: 10

Implementation of different algorithm in C / C++ based on BITL-5113.

COURSE CODE: BITL - 6111

COMPUTER GRAPHICS

Course Outcomes:

After passing this course the student will be able to:

CO1: Comprehend the background mechanism involved in display devices like CRT, LCD, LED, etc.

CO2: Comprehend basic concepts involved in drawing basic shapes.

CO3: Implement various algorithms and techniques to clip and transform various objects and viewports.

CO4: Identify the importance of viewing and projections.

Bachelor of Science (Information Technology) Semester – VI
(Session 2022-23)

COURSE CODE: BITL - 6111

COMPUTER GRAPHICS

Examination Time: 3 Hours

Max. Marks: 75
Theory: 60
CA: 15

Instructions for Paper Setter -

Eight questions of equal marks (12 marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT – I

Overview of Graphics system: Computer Graphics and their applications.

Display Devices: CRT Monitors (Random – Scan and Raster Scan, DVST, Plasma – Panel Display, LED and LCD Monitors, Virtual Reality and Workstation.

UNIT – II

Elementary Drawing: Points and various line drawing Algorithms and their comparisons. Circle generating algorithms, Algorithms for Ellipse, Arc and Sector.

UNIT – III

Two Dimensional Transformations: Basic Transformations - Translation, Rotation, Scaling, Reflection and Shearing. Matrix representation of Basic Transformations and Homogenous Coordinates.

Composite Transformations: Windowing and clipping. Windowing Concepts, Clipping and its Algorithms, Window–to–View Port Transformations.

UNIT - IV

Three Dimensional concepts: 3D Coordinate Systems, 3D Transformations - Translation, Rotation, Scaling, Reflection and Shearing,

Projection: Parallel Projections, Perspective Projection, Vanishing Point, View Confusion and Topological Distortion.

References / Textbooks:

1. Hearn D, Baker P, Computer Graphics, PHI Easter Economy (2002), 2nd Edition.

2. Zhigang Xiang, Plastock R, Kalley G, Computer Graphics, McGraw Hill Education (2006), 2nd Edition.

3. Rajesh K. Maurya, Computer Graphics with Virtual Reality System, Wiley (2018), 3rd Edition

4. Udit Aggarwal, Computer Graphics, SK Katria and Sons (2013), Reprint 2013 Edition

5. Padeep K. Bhatia, Computer Graphics, Dreamtech Press (2019)

6. Andries Van Dam, Foley, Steven, John, Computer Graphics Principles and Practice, Peson Education India (2002), 2nd Edition

COURSE CODE: BITL - 6112

DIGITAL MARKETING

Course Outcome:

After passing the course the student will be able to:

CO1: Identify impact of digital space and digital marketing in reaching out to customers.

CO2: Comprehend importance of Keywords in Search Engine Optimization.

CO3: Outline factors affecting Social Media Marketing.

CO4: Comprehend importance of Tools and Analytics in social media marketing.

Bachelor of Science (Information Technology) Semester- VI
(Session 2021-22)

COURSE CODE: BITL–6112

DIGITAL MARKETING

Examination Time: 3 Hrs   **Max. Marks: 75**
                                                                  Theory: 60
                                                                  CA: 15

Instructions for Paper Setter -

Eight questions of equal marks (12 marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT – I

Introduction to Marketing: Meaning, 4 Ps of Marketing, Value creation, communication, delivery and exchange. Segmentation, target marketing and positioning.

Consumer Behavior, Environmental and Psychological factors, decision making process and its stages. AIDAA model, Marketing Mix.

UNIT - II

Introduction to Digital Marketing: Introduction, Search Engine Optimization – Keywords, on page and off page optimization, Ad-Words, Meta-tags

Search Engine Marketing: Advertising, PPC, SEM Strategy, SEM Auction models.

UNIT – III

Social Media Marketing: Word of Mouth, factors affecting social media marketing, social media platforms- B2B and B2C.

UNIT – IV

Social Media Marketing Tools: Mobile marketing, website planning and creation, e-mail marketing, content marketing, online reputation management, digital analytics.

.

References / Textbooks:

1.   Phillip Kotler and Lane Keller Kevin, Marketing Management, Pearson Education
2.   Seema Gupta, Digital Marketing, Tata McGraw Hill Education (2018)

3. Ian Dodson, The Art of Digital Marketing: The defensive guide to Creating Strategic, Targeted and measurable Online campaigns, Wiley Publishers
4. Stephanie Diamond, Digital Marketing - All in One for Dummies, Wiley Publishers
5. Digital Marketers, The Ultimate Guide to Digital Marketing, https://www.digitalmarketer.com/digital-marketing/assets/pdf/ultimate-guide-to-digital-marketing.pdf
6. Damian Ryan, Understanding Digital Marketing: Marketing strategies for engaging, Cogan page Publishers Third Edition

Bachelor of Science (Information Technology) Semester – VI
(Session 2022-23)

COURSE CODE: BITP - 6113

LAB ON COMPUTER GRAPHICS

Max. Marks: 50
Practical: 40
CA: 10

Examination Time: 3 Hours

Lab on implementation of applications of Computer Graphics in C / C++.

COURSE CODE: BITD - 6114

PROJECT

Course Outcomes:

After passing course the student will be able to:

CO1: Apply the tools and techniques learnt to frame problems and their corresponding solutions.

CO2: Develop skills necessary to structure, manage and execute projects.

CO3: Learn to work as a member of a cohesive unit.

CO4: Develop presentation skills.

COURSE CODE: BITD - 6114

PROJECT

Max. Marks: 200
Practical: 160
CA: 40

Examination Time: 3 Hours

General Instructions:

1. 1. A software module based on the work done in the entire course is to be developed.
2. Candidates have to submit one hard copy and two CDs/DVDs of documentation which shall be kept with the HoD in the college only. Further, supervisor/guide shall forward one copy of DVD/CD containing all the documentation files of the students (file name to be saved as Rollno_of_the_ student.pdf) to the COE Office. The Covering letter (duly signed by the guide and Head of the department) should contain the following information. Candidate name, Candidate Roll no, Project Title of the student and .pdf file name of her project documentation.
3. The software module / website may be developed in groups, consisting of at most two students in a group.
4. The college shall depute guide(s)/supervisor(s) under whose supervision the software module shall be developed. The guide/supervisor shall clarify that the work done is original and authenticated. The certificate found to be incorrect at any stage shall attract the proceedings against all the stakeholders, as per rules.
5. The evaluation of the module shall be done as per the common ordinance of UG/PG under semester system.