



# UNIVERSITY OF JAMMU

(NAAC ACCREDITED 'A' GRADE UNIVERSITY)

Baba Sahib Ambedkar Road, Jammu-180006 (J&K)

## NOTIFICATION (20/Jan./Adp/59)

It is hereby notified for the information of all concerned that the Vice-Chancellor, in anticipation of the approval of the Academic Council, is pleased to authorize the adoption of the revised Syllabi and Courses of Study in the subject of M.Sc.IT from I to IV Semesters for the examinations to be held in the years as per the details given below:-

Subject	Semester	for the examination to be held in the years
M.Sc. IT	Semester-I	Dec. 2018, 2019 and 2020
	Semester-II	May 2019, 2020 and 2021
	Semester-III	Dec. 2019, 2020 and 2021
	Semester-IV	May 2020, 2021 and 2022

Sd/-  
DEAN ACADEMIC AFFAIRS

No. F. Acd./II/20/7219-7229

Dated: 22-1-2020.

### Copy for information and necessary action to:

1. Dean Faculty of Mathematical Science
2. HOD/Convener, Board of Studies in Computer Science
3. Director Kishtwar Campus, University of Jammu
4. All members of the Board of Studies
5. C.A to the Controller of Examinations
6. Asst. Registrar (Conf. /Exams. PG)
7. Incharge, University Website for necessary action please.

*Sumitasharma*  
Deputy Registrar (Academic)  
22/01/2020  
M  
22/01/2020

**DEPARTMENT OF COMPUTER SCIENCE & IT,  
UNIVERSITY OF JAMMU, JAMMU**

**PROPOSED SCHEME OF M.Sc.-IT COURSE STRUCTURE YEAR-2018 onwards**

SEMESTERWISE COURSE DISTRIBUTION AND PAPERWISE OUTLINE OF MASTERS DEGREE PROGRAMME IN INFORMATION TECHNOLOGY PROGRAMME [M.Sc.-IT]

**TOTAL CREDITS: 96**

**Semester – I**

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>	<b>External Marks</b>	<b>Internal Marks</b>	<b>Total</b>
MSCIT-102	Problem Solving Using C-Language	4	80	20	100
MSCIT-103	Logical Organization of Computers	4	80	20	100
MSCIT-104	Discrete Mathematics	4	80	20	100
MSCIT-105	Operating Systems	4	80	20	100
MSCIT-150	Practical based on above courses	8	100	100	200
	Total	24	420	180	600

**Semester – II**

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>	<b>External Marks</b>	<b>Internal Marks</b>	<b>Total</b>
MSCIT-201	Data and File Structures	4	80	20	100
MSCIT-202	Data Communication and Networks	4	80	20	100
MSCIT-204	Data Base Management System	4	80	20	100
MSCIT-206	Algorithm Design and Analysis	4	80	20	100
MSCIT-250	Practical based on above courses	8	100	100	200
	Total	24	420	180	600

### Semester – III

Course No.	Course Title	Credits	External Marks	Internal Marks	Total
MSCIT-301	Web Technologies	4	80	20	100
MSCIT-302	Java Programming	4	80	20	100
MSCIT-303	Artificial Intelligence	4	80	20	100
MSCIT-304	Compiler Design	4	80	20	100
MSCIT-350	Practical based on above courses	8	100	100	200
	Total	24	420	180	600

### Semester – IV

Course No.	Course Title	Credits	External Marks	Internal Marks	Total
MSCIT-401	Software Engineering	4	80	20	100
MSCIT-402	Computer Graphics	4	80	20	100
MSCIT-403	Programming in VB.NET	4	80	20	100
MSCIT-404	Android Programming	4	80	20	100
MSCIT-450	Practical based on above courses (Mini Project along with regular assignments)	8	100	100	200
	Total	24	420	180	600

### **SCHEME FOR PAPER SETTING**

The question paper will contain total 10 questions out of five units (two questions from each unit). The candidate has to attempt total five questions selecting one question from each unit. Each question will be of 16 marks.

## **SCHEME OF EVALUATION**

### **Theory Courses**

Each theory paper shall be of total 100 marks (4 credit course). The distribution of marks is as follows:

<b>Examination</b>	<b>Weightage</b>
Written Examination <i>(at the end of each semester to be conducted by the university)</i>	80%
Internal Assessment	20%

### **Internal Assessment**

For each course, there shall be two tests/assignments. The scheme of internal assessment is as follows:

<b>Test/Assignment-I</b>	<b>Test/Assignment-II</b>	<b>Attendance</b>	<b>Total</b>
8 marks	7 marks	5 marks	20 marks

### **Practical Courses**

Each practical course carries 200 marks distributed as follows:

<b>Practicals</b>				<b>Marks</b>
Internal Evaluation	I	Program Implementation & Viva-Voce	75 marks	100
	II	Practical File	15 marks	
	III	Attendance	10 marks	
External Evaluation				100
Total				200

## Internal Evaluation

### *Guidelines for internal Assessment of practical courses*

- Performance of the students will be evaluated based on a comprehensive system of continuous evaluation.
- For each practical course, students will be given regular assignments by the concerned practical teachers.
- The Implementation of assignments will be assessed & evaluated and viva-voce will be conducted atleast once in every month and then a set of further assignments may be given.
- Record of the Internal evaluation components I(Program Implementation & Viva-voce) shall be maintained regularly by the concerned teachers.
- At the end of the semester the Internal evaluation components II (Practical File) & III (Attendance) will be evaluated and consolidated with the record of components I to prepare the final award for Internal Practicals.

## External Evaluation

The practical examination shall be conducted by external and internal examiners. The external examiner shall be the incharge of the practical examination and will decide the distribution of marks for various components of the examination in consultation with the internal examiner.

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## **M.Sc. IT - FIRST SEMESTER**

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: December 2018, 2019, 2020	Int. Assessment = 20
<b>COURSE NO: MSCIT-102</b>	Total Marks = 100
<b>COURSE TITLE: PROBLEM SOLVING USING C - LANGUAGE.</b>	

### **UNIT-I**

Steps for Problem Solving, Algorithm and its features. Computational Complexity of an Algorithm, Flowcharts and their design. Pseudocode, Decision tables, Classification of programming languages.

12 HOURS

### **UNIT-II**

History of C – Language, Characteristics and Application Areas of C- language  
General Structure of C – program, Compiling and executing a program.  
Character set of C – language, identifiers, keywords, data types, variables, constants, expressions and operators in C - language. Standard Input/Output.  
Control statements – decision making statements, loops and iterations.

12 HOURS

### **UNIT-III**

Modular programming, Functions, Recursive functions, Command line Arguments, Storage classes in C - language  
Arrays – One dimensional Arrays, Multidimensional Arrays, Strings, String Input/Output, String manipulation functions, Array of Strings.  
C-preprocessor directives, Macros, Macros vs functions

12 HOURS

### **UNIT-IV**

Structure Declaration, assessing & initializing structures, structures as function arguments, structures and Arrays.  
Unions, Initializing and accessing the members of a union, Enumerated Data types.  
Syntax, Semantic, Linker, Logical and Runtime errors.

12 HOURS

### **UNIT-V**

Pointers and their characteristics, Pointer arithmetic, Passing pointers to functions, Arrays and pointers, Pointers and strings.  
Files: Files handling in C. Open and close a file in C, Input and output using file pointers, Sequential and random access files

12 HOURS

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: December 2018, 2019, 2020	Int. Assessment = 20
<b>COURSE NO: MSCIT-102</b>	Total Marks = 100
<b>COURSE TITLE: PROBLEM SOLVING USING C - LANGUAGE.</b>	

### **SUGGESTED READINGS:**

1. E. Balguruswamy, "Programming in ANSI C", 4th edition, 2007, McGraw-Hill Publication, New Delhi.
2. B.W. Kernighan and D.M. Ritchie, The C Programming Language, PHI.
3. B.S. Gottfried, Schaum's Outline of Theory and Problems of Programming with C, McGraw-Hill.
4. H. Schildt, C Made Easy, Osborne McGraw-Hill.
5. Yashwant Kanetkar, "Let us C" Seventh Edition, BPB publication, 2007
6. Cooper H. & Mullish H. : The Sprit of C, Jaico Publication House, New Delhi

### **SCHEME FOR PAPER SETTING**

**The question paper will contain total 10 questions out of five units (two questions from each unit). The candidate has to attempt total five questions selecting one question from each unit. Each question will be of 16 marks.**

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## **M.Sc. IT - FIRST SEMESTER**

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: December 2018, 2019, 2020	Int. Assessment = 20
<b>COURSE NO: MSCIT-103</b>	Total Marks = 100
<b>COURSE TITLE: LOGICAL ORGANIZATION OF COMPUTERS</b>	

### **UNIT - I**

Introduction & Data Representation

Overview of computers, Integer & floating point representation using IEEE FORMAT, Rules of Floating point Arithmetic, parity, Error detection and correction methods using Hamming technique, ASCII code representation, Number systems & their inter - conversion rules, Rules of addition/subtraction for r's, (r - 1)'s complements, BCD, excess - 3 respectively and their circuits.

12 HOURS

### **UNIT - II**

Logic Gates & Boolean Algebra

Logic gates, And, OR, NOT, NAND, XOR, NOR, XNOR Gates & their design. Boolean Algebra: Binary arithmetic, Boolean Expressions, Laws of Boolean Algebra, De - Morgan laws, K - map, simplification of Boolean Expressions using SOP, POS, K - map techniques.

12 HOURS

### **UNIT - III**

Memory & Register Organization

Memory: Basic memory cell, Static RAM, Static and Dynamic Memory, Types of ROM, associative memory, interleaved memory, Virtual memory, Cache memory Random access, Sequential access, Direct access, virtual memory. Register transfer Language and Architecture:

Register transfer language, micro-operation, I/O processor, CPU bus Architecture.

Modes of I/O transfer like DMA, programmed control, interrupts technique. Interrupt & instruction: Interrupt, its types & its life cycle.

12 HOURS



Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: December 2018, 2019, 2020	Int. Assessment = 20
<b>COURSE NO: MSCIT-103</b>	Total Marks = 100
<b>COURSE TITLE: LOGICAL ORGANIZATION OF COMPUTERS</b>	

#### **UNIT - IV**

##### Microprocessor & Control Design

Stack organisation, types of addressing modes, Instruction formats (one, two, three address etc.) Microprocessor 8086: Microcomputer structure, Architecture of 8086, Instruction set, Instruction format of 8086, Bit Slices, I/O interface adapter (Serial and Parallel), Memory read, Memory write, Memory map and I/O map, Interrupts like Serial, Polling and vector methods. Features and comparison of higher microprocessors, bus bandwidth Processor, Hardwired & Micro-programmed control unit.

12 HOURS

#### **UNIT - V**

##### Parallel processing

Classification of parallel machines, pipeline processing, Vector processing, multiprocessor system architecture-multiport memory, crossbar switch, timeshared common-bus, dual-bus, Bus arbitration.

12 HOURS

#### **SUGGESTED READINGS:**

1. MALVINO, A.P., LEACH, D.P.: Digital Principles and Applications, Tata McGraw-Hill, 3rd Edn. 1985
2. MILLMAN and HALKIAS: Integrated Electronics, McGraw-Hill.
3. STRANGIO, C.E.: Digital Electronics – Fundamental Concepts and sons, 1985
4. KHAMBATA, J.: Microprocessor and Microcomputer, John Wiley and Applications, PHI, 1984.
5. LIU, Y.GIBSON, G.A.: Microcomputer Systems: The 8086/808, Family, Prentice-Hall 2nd Edn, 1986.
6. ALEXANDRIDIS NIKITAS, A.: Microprocessor System Design Concepts, Galgotia Publications, 1984.
7. STONE, S.: Introduction to Computer Architecture, Galgotia Publications, 2nd Edn, 1986.
8. MANO, M.M.: Computer System Architecture, Prentice-Hall, 1976.
9. BAER, J.L.: Computer System Architecture, Computer Science Press, 1980.

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: December 2018, 2019, 2020	Int. Assessment = 20
<b>COURSE NO: MSCIT-103</b>	Total Marks = 100
<b>COURSE TITLE: LOGICAL ORGANIZATION OF COMPUTERS</b>	

### **SCHEME FOR PAPER SETTING**

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## **M.Sc. IT - FIRST SEMESTER**

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: December 2018, 2019, 2020	Int. Assessment = 20
<b>COURSE NO: MSCIT-104</b>	Total Marks = 100
<b>COURSE TITLE: DISCRETE MATHEMATICS</b>	

### **UNIT - I**

Counting techniques:

Basics of counting pigeon hole principles, permutation and combination, Recurrence Relations & their solution (Homogeneous & non-homogenous), Decision trees, Divide & Conquer Relations function, Decision trees

12 HOURS

### **UNIT - II**

Logic & Fuzzy sets:

Logic operators like AND, OR etc., Truth tables; theory of inference and deductions, Mathematical Induction, predicate calculus, predicate and quantifiers.

Introduction to fuzzy systems, fuzzy sets, equality of fuzzy sets, normal fuzzy sets, containment, support of a fuzzy set. Alpha-level sets. Basic operation of Fuzzy sets.

12 HOURS

### **UNIT - III**

Graph:

Introduction to Graphs; Incidence and degree; Handshaking Lemma; Isomorphism; Subgraphs and Union of graphs; connectedness; Walks, Paths and Circuits; Components; Connectedness Algorithm, shortest path Algorithms, Eulerian graph; Fleury's algorithms, Hamiltonian graph - Necessary conditions and sufficient conditions; Travelling salesman problem; Bipartite graphs; Directed Graphs, Binary relations, connectedness in directed Graph.

Matrix representations of graph: Incidence; Adjacency matrices and their properties.

12 HOURS

### **UNIT - IV**

Trees:

Properties of trees; Pendant vertices in a tree: Center of a tree; Rooted an binary trees; Spanning Trees – spanning tree algorithms; Fundamental circuits; Spanning trees of a weighted graph, cutsets and cut – Vertices; Fundamental cutsets; connectivity and separativity;

12 HOURS

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: December 2018, 2019, 2020	Int. Assessment = 20
<b>COURSE NO: MSCIT-104</b>	Total Marks = 100
<b>COURSE TITLE: DISCRETE MATHEMATICS</b>	

### **UNIT - V**

Planar graphs & colouring:

Combinatorial and geometric dual; Kuratowski's graphs; Detection of planarity; Thickness and crossings.

Colorings: Vertex coloring, Chromatic number; Chromatic polynomial, The four colour problem, edge coloring.

12 HOURS

### **SUGGESTED READINGS:**

1. Harry, F.: Graph Theory: Addison - Wesley Publ. Comp.
2. Trembly, J.P. and Manohar, R.P.: Discrete Mathematical Structures with Applications to Computer Science, McGraw – Hill.
3. Deo, N.: Graph Theory with Applications to Engineering and Computer Science, Prentice-Hall Inc.
4. Krishnamurthy, V.: Combinatorics: Theory and Applications, Affiliated East-West Press Pvt. Ltd.
5. Doerr, A. and Levasseur, K.: Applied Discrete Structures of Computer Science, Galgotia Publications Ptv. Ltd.

### **SCHEME FOR PAPER SETTING**

**The question paper will contain total 10 questions out of five units (two questions from each unit). The candidate has to attempt total five questions selecting one question from each unit. Each question will be of 16 marks.**

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## **M.Sc. IT - FIRST SEMESTER**

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: December 2018, 2019, 2020	Int. Assessment = 20
<b>COURSE NO: MSCIT-105</b>	Total Marks = 100
<b>COURSE TITLE: OPERATING SYSTEMS</b>	

### **UNIT – I**

Introduction:

Evolution of operating systems, operating systems concepts, types of operating systems, different views of the operating system, operating system structure.

12 HOURS

### **UNIT – II**

Processes:

Concept, Operating system's view of processes, Interprocess communication, mutual exclusion, Interprocess synchronization, semaphores, Monitors, Message passing, process scheduling and performance criteria, scheduling algorithms, deadlocks, deadlock handling strategies.

12 HOURS

### **UNIT – III**

Memory Management:

Basic memory management, swapping, relocation & protection, virtual memory, paging, page replacement algorithms, Design issues for paging systems, segmentation.

12 HOURS

### **UNIT – IV**

File & I/O Management:

Files, directories, disk organization, disk space management, disk scheduling, Protection Mechanisms, I/O devices, I/O buffering, device controllers.

12 HOURS

### **UNIT – V**

Multiprocessors, Distributed OS:

Multiprocessors: Advantages, classification, Interconnection, types of multiprocessor OS

Distributed system & Network Operating Systems: Introduction, benefits, algorithms for distributed processing, Network OS; Remote Login; remote file transfer

12 HOURS

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: December 2018, 2019, 2020	Int. Assessment = 20
<b>COURSE NO: MSCIT-105</b>	Total Marks = 100
<b>COURSE TITLE: OPERATING SYSTEMS</b>	

### **SUGGESTED READINGS:**

- 1) Andrew. S. Tanenbaum : Modern operating systems, pearson prentice hall.
- 2) A. S. Tanenbaum , A. S. Woodhull : Operating systems-design and implementation, Prentice hall of India pvt. ltd.
- 3) Milenkovic M : Operating system-concepts and design, McGraw hillinternational editions.
- 4) Silberschartz, Galvin, Gagne : Operating system Principles , WSE wiley.
- 5) A S Godbole : Operating systems, tata McGraw hill.
- 6) Bach M. : Design of the UNIX Operating Systems.
- 7) Deitel H. M. : An Introduction to operating system, addison- wesley publications.
- 8) Madnick & Donovan: Operating systems, mcgraw-hill book co.
- 9) Understanding Operating Systems – Flynn – Thomson Learning

### **SCHEME FOR PAPER SETTING**

**The question paper will contain total 10 questions out of five units (two questions from each unit). The candidate has to attempt total five questions selecting one question from each unit. Each question will be of 16 marks.**

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Syllabus of MSc-IT under Non-Choice Based Credit System for the students to be admitted in the year 2018-19, 2019-20, 2020-21.

**M.Sc. IT - FIRST SEMESTER**

Total Marks = 200

No. of Credits = 8

Examination to be held: December 2018, 2019, 2020

Internal Evaluation=100 Marks

External Evaluation = 100 Marks

***COURSE NO: MSCIT150***

***PRACTICAL***

**Practical in this course shall be based on all above courses with special emphasis to C-Language.**

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## **M.Sc. IT - SECOND SEMESTER**

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: May 2019, 2020, 2021	Int. Assessment = 20
<b>COURSE NO: MSCIT-201</b>	Total Marks = 100
<b>COURSE TITLE: DATA AND FILE STRUCTURES</b>	

### **UNIT - I**

Fundamental Notations:

Primitive and composite data types, Time and space complexity of algorithms. Storage structures for arrays & matrices, sparse matrices, strings, pattern matching.

12 HOURS

### **UNIT - II**

Linear Data Structures:

Arrays and Linked Lists, Singly linked lists, Doubly linked list, Circular linked list, Doubly circular linked lists, Dynamic Storage Management. Applications of linked lists

Stacks and Queues: representation and Applications. Deque, Priority queues

12 HOURS

### **UNIT - III**

Non-Linear Data Structures:

Trees, Binary Trees, Traversing binary trees, Threaded binary trees, Binary search trees - representation and Applications, Heaps - representation and Applications.

Graphs - representation and Applications, Path matrix, Graph traversal- DFS and BFS

12 HOURS

### **UNIT - IV**

File Structures:

Concepts of fields & records, Classification of files, File operations, File organizations, Variable length records and text files. Indexing structures like B – trees, ISAM. Hashing techniques for Direct Files.

12 HOURS

### **UNIT - V**

Sorting:

Internal and External Sorts, Bubble sort, Insertion sort, Selection Sort, heap sort & Quick sort, Searching techniques- linear search & binary search , Merging algorithms.

12 HOURS



Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: May 2019, 2020, 2021	Int. Assessment = 20
<b>COURSE NO: MSCIT-201</b>	Total Marks = 100
<b>COURSE TITLE: DATA AND FILE STRUCTURES</b>	

### **SUGGESTED READINGS:**

1. Seymour Lipschutz : Theory and Problems of Data Structures  
St. Sehaum's Outline Series in Computers  
Publisher: Tata McGraw-Hill
2. Richard Gilberg, Behrouz A. Forouzan, "Data Structures: A pseudo code approach with C", Second Edition, 2007, CENGAGE India Pvt. Ltd., New Delhi.
3. Horowitz, E., and Sahni, S.: Fundamentals of data Structures  
Computer Science Press.
4. Aho, A.V., Hopcraft, and Ullman, J.E.; Data Structures and Algorithms,  
Addison Weseley.
5. Tanhenbaum, A.M., and Augenstein, M.J.: Data Structures with C,  
Prentice- Hall, and International.
6. Bhagat Singh and Naps Thompson : Introduction to Data Structures using  
Pascal Publisher: Galgotia

### **SCHEME FOR PAPER SETTING**

**The question paper will contain total 10 questions out of five units (two questions from each unit). The candidate has to attempt total five questions selecting one question from each unit. Each question will be of 16 marks.**

-X-

## **M.Sc. IT - SECOND SEMESTER**

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: May 2019, 2020, 2021	Int. Assessment = 20
<b>COURSE NO: MSCIT-202</b>	Total Marks = 100
<b>COURSE TITLE: DATA COMMUNICATION AND NETWORKS</b>	

### **Unit – I**

Data Communication Concepts : Signal and Data, Transmission, Bit rate, Baud Rate, Digital Data, Analog Data, Digital Signal, Analog Signal, Simplex, Half Duplex and Full Duplex Modes of Transmission, Synchronous and Asynchronous Transmission, Modulation: Amplitude Modulation, Frequency Modulation, Phase Modulation, Bandwidth concepts, channel Capacity. Introduction to Networking: Computer Network, Characteristics and advantages of networking, Types of networking.

12 HOURS

### **Unit – II**

Transmission media & Network Topologies: Guided and Unguided media, Twisted Pair Cable, Coaxial Cable, FOC(Fiber Optics Cable), Radio,VHF and Microwaves, Satellite link, Different Network Topologies, Their advantages and Disadvantages.

Multiplexing Channels and Concept of Multi Channeling and modulation, pulse code modulation, Frequency Division Multiplexing, Time Division Multiplexing.

12 HOURS

### **Unit-III**

Network Standards: OSI Model and different Layers, Protocols associated with different OSI layers , Functions and Responsibilities of each layer, Simple Network Management Protocol(SNMP), Simple Mail Transfer Protocol (SMTP), Multipurpose Internet Mail Extension (MIME), Hyper Text Transfer Protocol(HTTP), File Transfer Protocol (FTP), Uniform Resource Locator(URL). Switching: Switching Concept, Circuit Switching , Packet Switching and Message switching.

12 HOURS

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: May 2019, 2020, 2021	Int. Assessment = 20
<b>COURSE NO: MSCIT-202</b>	Total Marks = 100
<b>COURSE TITLE: DATA COMMUNICATION AND NETWORKS</b>	

#### **Unit-IV**

Internet: Concepts, History of Internet, TCP-IP, Applications of Internet, email, Telnet, FTP, Remote Login, WWW, Dialup broadband, ISDN:-Elements, Uses of ISDN, Broadband ISDN, Leased line, Internet Service Providers, X.25, IEEE 802.11 - Architecture- BSS, ESS, Physical layer – FHSS, DSSS, OFDM; MAC layer – DCF, PCF, Bluetooth – Architecture, Bluetooth layers – Media layer, base band layer, physical links, L2 CAP

12 HOURS

#### **Unit-V**

Internetworking: Principles of Internetworking, Connectivity Devices, Hub, Bridges, Routers, Routing with bridges, Switches, Gateways, VAST, Modems, Connectionless internetworking, Connection oriented internetworking, Wireless Protocols (WIFI, Wimax)

12 HOURS

#### **SUGGESTED READINGS:**

1. Behrouz A. Forouzan. Data Communications and Networking. McGraw Hill.
2. Achyut S. Godbole Data Communication & Networking Tata McGraw-Hill
3. Michal Miller, Introduction to Digital And Data Communications, JAICO Pub.
4. Shay, William, Understanding Data Communications and Networks, Brooks/Cole Publishing Company
5. Computer Networks, A. Tanenbaum, PHI Pub.

#### **SCHEME FOR PAPER SETTING**

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## **M.Sc. IT - SECOND SEMESTER**

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: May 2019, 2020, 2021	Int. Assessment = 20
<b>COURSE NO: MSCIT-204</b>	Total Marks = 100
<b>COURSE TITLE: DATA BASE MANAGEMENT SYSTEM</b>	

### **UNIT – I**

Database Management System Concepts:

File based system, Need of database Management System (DBMS), Components of DBMS, data independence, three level architectural of database, entity relationship model, conversion of ER diagrams to relational Database, conventional file organizations, inverted files, hashing and B tree.

12 HOURS

### **UNIT – II**

Data Models:

Hierarchical, network and relational data models, relational database Design, relation concepts of joins, relational algebra and calculus.

12 HOURS

### **UNIT – III**

Normalisation:

Functional Dependencies, multivalued dependencies, theory of normalization, normal forms.

Concurrency Control:

Data security, recovery management, recovery techniques, concurrency management.

12 HOURS

### **UNIT – IV**

SQL using Oracle:

SQL query processing table creation and management, using inbuilt functions, data integrity constraints, views, joins, SET operators, privileged roles and security policies.

12 HOURS

### **UNIT – V**

Oracle PL/SQL

Architecture, Fundamentals, PL/SQL control structure, Exception, Cursors, procedures and functions, packages database triggers.

12 HOURS

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: May 2019, 2020, 2021	Int. Assessment = 20
<b>COURSE NO: MSCIT-204</b>	Total Marks = 100
<b>COURSE TITLE: DATA BASE MANAGEMENT SYSTEM</b>	

### **SUGGESTED READINGS:**

1. Bipin C.Desai: An Introduction to Database Systems, West-publishing company.
2. Elmasri, Navathe: Fundamentals of Database Systems, Addison Wesley, Pearson Education.
3. Date, C.J.: An Introduction to Database Systems Addison Wesley Pearson Education.
4. R.A. Parida, Vinod Sharma: The power of Oracle 9i, Firewall Media publications.
5. V.K. Jain: Database Mgt. System, Wiley India

### **SCHEME FOR PAPER SETTING**

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## **M.Sc. IT - SECOND SEMESTER**

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: May 2019, 2020, 2021	Int. Assessment = 20
<b>COURSE NO: MSCIT-206</b>	Total Marks = 100
<b>COURSE TITLE: ALGORITHM DESIGN AND ANALYSIS</b>	

### **UNIT - I**

Review of Algorithms and Data Structures

Algorithms, Problems and Instances, Characteristics, Basic Instructions, Control Mechanisms and Control Structures, Stacks and Queues, Trees, Graphs.

Understanding and Analyzing the Problem, Choice of Appropriate Data Structures and Design Technology, Analyzing an Algorithm.

12 HOURS

### **Unit - II**

Basics of Analysis

Asymptotic Bounds, Concept of Efficiency of an Algorithm, Well Known Asymptotic Functions & Notations.

Well Known Sorting & Searching Algorithms, Best-Case and Worst-Case Analyses, Average-Case Analysis, Amortized Analysis, Analysis of Sorting and Searching algorithms

12 HOURS

### **Unit - III**

Design Techniques

Divide-and-Conquer, General Method, Binary Search, Merge Sort, Quick Sort, Strassen's Matrix multiplication, Exponentiation.

Greedy Algorithms, General Method, Knapsack problem, Job sequencing with dead lines, Minimum Cost Spanning Trees - Kruskal's Algorithm, Prim's Algorithm, Single Source Shortest Paths.

12 HOURS

### **UNIT - IV**

Design Techniques

Dynamic Programming, General Method, Multistage Graphs, All-Pairs shortest Paths, The Principle of Optimality, The Traveling Salesperson Problem, Chained Matrix Multiplication.

Backtracking, General method, 8-queen's problem, Sum of Subsets problem.

12 HOURS

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: May 2019, 2020, 2021	Int. Assessment = 20
<b>COURSE NO: MSCIT-206</b>	Total Marks = 100
<b>COURSE TITLE: ALGORITHM DESIGN AND ANALYSIS</b>	

### **UNIT – V**

Classification of Problems & Basic Traversals Techniques  
Non-Deterministic Algorithms, Introduction to NP-Completeness, Establishing NP-Completeness of Problems, NP-Completeness Proofs, NP-Hard Problems,  
Basic Traversal and Search techniques: Traversing Trees, Depth-First Search, Breadth-First Search, Best-First Search & Minimax Principle, Topological Sort.

12 HOURS

### **SUGGESTED READINGS:**

- 1) Ellis Horowitz and Sartaj Sahni – Fundamentals of Computer Algorithms, Galgotia Publ.
- 2) Aho A V , Hopcroft J E, Ullman J D – The Design and Analysis of Computer Algorithms, Addison Wesley.
- 3) G. Brassard and P. Bratley - Fundamental of Algorithmics, Prentice-Hall-of India.
- 4) D. Harel - Algorithmics : The spirit of computing , Addison Wesley.
- 5) R. Neapolitan and K. Naimipour – Foundation of Algorithms , D.C. Health-and Company
- 6) D. E. Knuth - Foundation Algorithms , Narosa Publishing House.

### **SCHEME FOR PAPER SETTING**

**The question paper will contain total 10 questions out of five units (two questions from each unit). The candidate has to attempt total five questions selecting one question from each unit. Each question will be of 16 marks**

-X-

**M.Sc. IT - SECOND SEMESTER**

Total Marks = 200  
No. of Credits = 8  
Examination to be held: May 2019, 2020, 2021

Internal Evaluation = 100 Marks  
External Evaluation = 100 Marks

***COURSE NO: MSCIT250***  
***PRACTICAL***

**Practical in this course shall be based on all above courses with special emphasis to SQL.**

-X-



## **M.Sc. IT - THIRD SEMESTER**

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: December 2019, 2020, 2021	Int. Assessment = 20
<b>COURSE NO: MSCIT-301</b>	Total Marks = 100
<b>COURSE TITLE: WEB TECHNOLOGIES</b>	

### **Unit-I**

Web Server, Web site, Web page, URL, Setting up of a web server, Web Browser and its Working.

Introduction to HTML, Text Formatting Tags, BODY Tag, HEAD Tag, META Tag, Adding Lists, Table, Frame and Form, Embedding objects.

12 HOURS

### **Unit II**

Introduction to DHTML, Cascading Style Sheet, Defining Styles, Elements of Style, Linking a Style Sheet to an HTML Document, In-line Styles, External Style Sheets, Internal Style Sheets, Multiple Styles.

JavaScript, Variables, String manipulation, Mathematical Functions, Statements, Operators, Arrays, and Functions, Data and Objects, Regular Expressions, Built-in Objects, Events, Data validation, Opening a New Window, Messages and Confirmations, The Status Bar, Writing to a Different Frame, Rollover Buttons, Moving Images.

12 HOURS

### **Unit III**

Java Applets : Life Cycle of Applet, Creating Applets, Adding Applet to HTML File; Running the Applet, Passing Parameters to an Applet, Drawing Images on the applet, Introduction to SWING.

XML, structure of XML document, using DTD with XML, XML Entities, XML schema

12 HOURS

### **Unit IV**

CGI, Servlets, HTTP servlet, Servlet Life Cycle, Servlet Request and Response Interface session tracking, Database connectivity, JDBC vs ODBC Inter-servlet communication.

12 HOURS

### **Unit V**

JSP, scripting Elements, JSP Expression, JSP Declaration, Predefined variables/objects, Working with Databases Using JSP, Inserting, Updating, and Deleting Database Records.

12 HOURS

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: December 2019, 2020, 2021	Int. Assessment = 20
<b>COURSE NO: MSCIT-301</b>	Total Marks = 100
<b>COURSE TITLE: WEB TECHNOLOGIES</b>	

### **SUGGESTED READINGS:**

1. Web Programming – Chris bates – Wiley Dreamtech India – 2<sup>nd</sup> Ed. 2002.
2. Internet and Web Technologies – Raj kamal – Tata McGrawHill – 2002
3. Multimedia and Web Technology, Ramesh Bangia, 2e, Firewall Media
4. The Complete Reference Java 2, Herbert Schildt and Patrrick Manghton, 3e, Tata McGraw Hill
5. Internet and Worldwide Web, H.M. Deitel, P.J. Dietel and A.B. Goldberg, 3e, Pearson Education
6. Java Servlets, Karl Moss, 2e, Tata McGraw Hills
7. Mastering Javascript and Jscript, James Jaworski, 2e, BPB
8. HTML 4.0, E. Stephen Mack and Janan Platt, 1e, BPB
9. JSP The complete Reference, Phil Hana
10. Java Servlets and JSP, Bonce W. Perry,
11. ASP Developer’s Guide, Greg Bnczek, 1e, McGraw Hill
12. “XML: Related Technologies and Programming with Java” PHI
13. Dynamic HTML, Jeff Rule, 1e, Dreamtech Press
14. The Complete Reference Java Script, Thomas Powell and Fritz Schneider, 2e, Tata McGraw Hill
15. Java Server pages in 24 Hours, Jose Annunziato and Stephanie Fesler Kaminaris 1e, Techmedia

### **SCHEME FOR PAPER SETTING**

**The question paper will contain total 10 questions out of five units (two questions from each unit). The candidate has to attempt total five questions selecting one question from each unit. Each question will be of 16 marks.**

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## **M.Sc. IT - THIRD SEMESTER**

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: December 2019, 2020, 2021	Int. Assessment = 20
<b>COURSE NO: MSCIT-302</b>	Total Marks = 100
<b>COURSE TITLE: JAVA PROGRAMMING</b>	

### **Unit -I**

Java Language Basics, Object Oriented concepts, Java Virtual Machine Concepts, Primitive Data Type And Variables, Java Keywords, Java Operators, Expressions, Control Statements and Arrays.

12 HOURS

### **Unit -II**

Class and Objects, Static methods, Final methods, Constructors, Method Overloading, Inheritance, Access Control, Method Overriding, Dynamic method dispatch, Garbage Collection, Abstract Classes, Polymorphism

12 HOURS

### **Unit -III**

Packages, Interfaces, Nested classes and interfaces, Exceptions Handling, Types of Exceptions, Writing Exception Subclasses, Multithreading, Synchronization in Java

12 HOURS

### **Unit -IV**

I/O in Java, Byte Stream Classes, Character Stream Classes, Reading and Writing to Console, Reading and Writing Files, The Transient and Volatile Modifiers, The String and String Buffer Class, Network Programming in Java, TCP/IP Sockets and Datagrams.

12 HOURS

### **Unit -V**

The Applet Class, An Applet Skeleton, Graphics and User Interfaces, AWT classes, Building User Interface with AWT, menus, Event Handling, Layouts and Layout Manager, Overview of Java Swing classes.

12 HOURS

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: December 2019, 2020, 2021	Int. Assessment = 20
<b>COURSE NO: MSCIT-302</b>	Total Marks = 100
<b>COURSE TITLE: JAVA PROGRAMMING</b>	

### **SUGGESTED READINGS:**

- 1) Herbert Schildt – “Java2 The Complete Reference” , Tata Mcgraw Hill.
- 2) E. Balagurusamy - “ Programming with JAVA”, Tata McGraw Hill.
- 3) Dietel & Dietel – “Java How to Program” , Pearson Education.
- 4) Steven Holzner – “Java2 Black Book” , Dreamtech Press.
- 5) Grant Palmer – “Java Programmer’s Reference” , Wrox.
- 6) Jamie Jaworski – “Java2 Platform Unleashed”, TechMedia.
- 7) Bruce Eckel – “Thinking in Java”, Prentice Hall.

### **SCHEME FOR PAPER SETTING**

**The question paper will contain total 10 questions out of five units (two questions from each unit). The candidate has to attempt total five questions selecting one question from each unit. Each question will be of 16 marks.**

-X-

### **M.Sc. IT - THIRD SEMESTER**

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: December 2019, 2020, 2021	Int. Assessment = 20
<b>COURSE NO: MSCIT-303</b>	Total Marks = 100
<b>COURSE TITLE: ARTIFICIAL INTELLIGENCE</b>	

#### **Unit-I**

Introduction Artificial Intelligence:

Simulation of a So-called intelligent behaviour in different areas; Problem Solving, min-max principle, Learning, Aim-oriented (Heuristic) algorithms versus solution-guaranteed algorithms. Study of different application areas of AI.

12 HOURS

#### **Unit-II**

Understanding Natural Languages:

Parsing techniques, context free and transformational grammars, transition nets, augmented transition nets, Fillmore's grammar, grammar-free analyzers, sentence generation, translation.

12 HOURS

#### **Unit-III**

Knowledge Representation:

First-order predicate calculus; Semantic nets, partitioned nets; Frames, case-grammar theory, conceptual dependency, production rules, knowledge base,

12 HOURS

#### **Unit-IV**

Expert System Architecture:

domain exploration Meta-knowledge, expertise transfer, self-explaining system. Inference system, forward and backward deduction. Existing System (DENDRAL, MYCIN);

12 HOURS

#### **Unit-V**

Pattern Recognition Structured Description:

Visual perception, machine perception, Action, Support Vector Machine, Bayesian decision theory, object identification, speech recognition.

12 HOURS

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: December 2019, 2020, 2021	Int. Assessment = 20
<b>COURSE NO: MSCIT-303</b>	Total Marks = 100
<b>COURSE TITLE: ARTIFICIAL INTELLIGENCE</b>	

### **SUGGESTED READINGS:**

1. Charniak, E.: Introduction of Artificial Intelligence, Narosa Publishing House.
2. Winston, P.H.: LISP, Narosa Publishing House.
3. Milner, Common LISP: A Tutorial, Prentice-Hall Inc. 1988.
4. Marcellus: Expert System Programming in TURBO PROLOG, Prentice-Hall-Inc. 1989.
5. Elaine, R.: Artificial Intelligence, 1983.
6. Hunt, E.B.: Artificial Intelligence, Academic Press, 1975.
7. Lloyd, J.: Foundation of Logic Programming Springer-Verlog, 1982.
8. Clark, K.L. & McCabe, F.G.: Micro-prolog, Prentice-Hall, India, 1987.
9. Clockskin, W.F. and Mellish, C.S.: Programming in Prolog, Narosa Publishing House.

### **SCHEME FOR PAPER SETTING**

**The question paper will contain total 10 questions out of five units (two questions from each unit). The candidate has to attempt total five questions selecting one question from each unit. Each question will be of 16 marks.**

-X-

### **M.Sc. IT - THIRD SEMESTER**

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: December 2019, 2020, 2021	Int. Assessment = 20
<b>COURSE NO: MSCIT-304</b>	Total Marks = 100
<b>COURSE TITLE: COMPILER DESIGN</b>	

#### **Unit-I**

Compiler Structure: Compilers and Translators, Analysis- Synthesis Model of Compilation, Various Phases of Compiler, Pass Structure, Bootstrapping & Compiler Construction Tools. Lexical Analysis: Interface with input, parser and symbol table, token, lexeme and patterns, difficulties in lexical analysis, Error Reporting, Regular definition, Transition diagrams, LEX. Capabilities of Lexical Analyzer

12 HOURS

#### **Unit-II**

Finite Automata: Nondeterministic Finite Automata, Deterministic Finite Automata, Subset Construction, Thompson's construction, DFA State Minimization. The Syntactic Specification of Programming Languages: CFG, Derivation and Parse tree, Ambiguity, Capabilities of CFG.

12 HOURS

#### **Unit-III**

Basic Parsing Techniques: Top-Down parsers with backtracking, Recursive Descent Parsers, Predictive Parsers, Nonrecursive Predictive Parsers, Bottom-up Parsers, Shift-Reduce Parsing, Operator Precedence Parsers, LR parsers. YACC, Syntax Directed Definitions, Type checking

12 HOURS

#### **Unit-IV**

Run Time Memory Management: Static and Dynamic storage allocation, stack based memory allocation schemes, Symbol Table management. Error Detection and Recovery: Lexical phase errors, Syntactic phase errors, Semantic errors. Intermediate Code Generation: Different Intermediate forms: three address code, Quadruples & Triples.

12 HOURS

#### **Unit-V**

Sources of optimization, Local optimization, Loop optimization, Peephole optimization. Issues in the design of Code Generator, Basic Blocks and Flow Graphs, Transformations on Basic Blocks, DAG, Code Generation Algorithm, Register Allocation and Assignment.

12 HOURS

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: December 2019, 2020, 2021	Int. Assessment = 20
<b>COURSE NO: MSCIT-304</b>	Total Marks = 100
<b>COURSE TITLE: COMPILER DESIGN</b>	

### **SUGGESTED READINGS:**

1. Alfred V Aho , Jeffrey D. Ullman: "Principles of Compiler Design", Narosa Publ. House.
2. A.V. Aho, R. Sethi and J.D Ullman: "Compiler: principle, Techniques and Tools", Addison Wesley.
3. Tremblay and Sorenson: "The theory and Practice of Compiler Writing" – McGraw Hill.
4. Tremblay and Sorenson: "An Implementation Guide to Compiler Writing" – McGraw Hill.
5. Londa: "Compiler Construction" - Thomson Learning
6. H.C. Holub: "Compiler Design in C", Prentice Hall.
7. Apple: "Modern Computer Implementation in C: Basic Design", Cambridge press
8. Compiler Construction: Principles & Practice: Londa – Thomson Learning

### **SCHEME FOR PAPER SETTING**

**The question paper will contain total 10 questions out of five units (two questions from each unit). The candidate has to attempt total five questions selecting one question from each unit. Each question will be of 16 marks.**

-X-



**M.Sc. IT - THIRD SEMESTER**

Total Marks = 200

No. of Credits = 8

Examination to be held: December 2019, 2020, 2021

Internal Evaluation = 100 Marks

External Evaluation = 100 Marks

***COURSE NO: MSCIT350***

***PRACTICAL***

**Practical in this course shall be based on all above courses with special emphasis to JAVA and Web Technologies.**

-X-

## **M.Sc. IT - FOURTH SEMESTER**

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: May 2020, 2021, 2022	Int. Assessment = 20
<b>COURSE NO: MSCIT-401</b>	Total Marks = 100
<b>COURSE TITLE: SOFTWARE ENGINEERING</b>	

### **UNIT-I**

Software Process

Introduction –S/W Engineering Paradigm , life cycle models (water fall, incremental, spiral, WINWIN spiral, evolutionary, prototyping, object oriented system engineering, computer based system verification, validation, life cycle process, development process, system engineering hierarchy.

12 HOURS

### **UNIT-II**

Software Requirements

Functional and non functional user system, requirement engineering process, feasibility studies, requirements , elicitation, validation and management , software prototyping, prototyping in the software process – rapid prototyping techniques – user interface prototyping -S/W document. Analysis and modeling – data, functional and behavioral models – structured analysis and data dictionary.

12 HOURS

### **UNIT-III**

Design Concepts and Principles

Design process and concepts – modular design – design heuristic – design model and document. Architectural design – software architecture – data design – architectural design – transform and transaction mapping – user interface design – user interface design principles. Real time systems - Real time software design – system design – real time executives – data acquisition system - monitoring and control system. SCM – Need for SCM – Version control – Introduction to SCM process – Software configuration items.

12 HOURS

### **UNIT-IV**

Testing

Taxonomy of software testing – levels – test activities – types of s/w test – black box testing – testing boundary conditions – structural testing – test coverage criteria based on data flow mechanisms – regression testing – testing in the large. S/W testing strategies – strategic approach and issues - unit testing – integration testing – validation testing – system testing and debugging.

12 HOURS

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: May 2020, 2021, 2022	Int. Assessment = 20
<b>COURSE NO: MSCIT-401</b>	Total Marks = 100
<b>COURSE TITLE: SOFTWARE ENGINEERING</b>	

### **UNIT-V**

Software Project Management

Measures and measurements – S/W complexity and science measure – size measure – data and logic structure measure – information flow measure. Software cost estimation – function point models – COCOMO model- Delphi method.- Defining a Task Network – Scheduling – Earned Value Analysis – Error Tracking - Software changes – program evolution dynamics – software maintenance – Architectural evolution. Taxonomy of CASE tools.

12 HOURS

### **SUGGESTED READINGS:**

1. Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill International Edition
2. Ian Sommerville, Software engineering, Pearson education Asia.
3. Pankaj Jalote- An Integrated Approach to Software Engineering, Springer Verlag.
4. James F Peters and Witold Pedryez, "Software Engineering – An Engineering Approach", John Wiley and Sons, New Delhi.

### **SCHEME FOR PAPER SETTING**

**The question paper will contain total 10 questions out of five units (two questions from each unit). The candidate has to attempt total five questions selecting one question from each unit. Each question will be of 16 marks.**

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## **M.Sc. IT - FOURTH SEMESTER**

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: May 2020, 2021, 2022	Int. Assessment = 20
<b>COURSE NO: MSCIT-402</b>	Total Marks = 100
<b>COURSE TITLE: COMPUTER GRAPHICS</b>	

### **UNIT-I**

Concept of Computer Graphics and its applications. Graphics input and output devices. Graphic display devices (refreshing display devices, Random scan display device, Raster scan devices.

12 HOURS

### **UNIT-II**

Concept of Graphic Primitives, points, lines etc., line generation algorithms (DDA and Bresenham's)

Circle and its properties, generation of circle (mid point algorithms), Polygon filling, using scan line filling algorithm.

Point and Line clipping, Cohen Sutherland and Cyrus – Beck Line Clipping algorithms.

12 HOURS

### **UNIT-III**

Concept of 2D transformations. Basic Transformations (translation, rotation, scaling, shearing) composite transformations, transformations using homogeneous coordinate systems.

3D transformations (Translation, rotation, scaling, shearing, reflection).

12 HOURS

### **UNIT-IV**

Introduction, objectives of viewing transformation. Concept of projections: parallel projection, orthographic and oblique projections, isometric projections, perspective projections (concept of vanishing points, single point, perspective transformation, 2-point and 3-point perspective transformation and general perspective transformation with COP at the origin.

12 HOURS

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: May 2020, 2021, 2022	Int. Assessment = 20
<b>COURSE NO: MSCIT-402</b>	Total Marks = 100
<b>COURSE TITLE: COMPUTER GRAPHICS</b>	

### **UNIT-V**

Polygon representation methods (polygon surfaces, polygon tables, plain equation, polygon meshes)

Hermite and Bezier curves and their properties. Surface of revolution.

Concept of visible surface detection. Methods of visible surface detection (depth buffer, scan line, area sub division)

12 HOURS

### **SUGGESTED READINGS:**

1. Giloi, Wk.: Interactive Computer Graphics, Prentice-Hall.
2. Newman, W., Sproul, R.F.: Principles of Interactive Computer Graphics, McGraw-Hill.
3. Rogers, D.F.: Procedural Elements for Computer Graphics, McGraw-Hill.
4. Harrington, S.: Computer Graphics: A Programming Approach, TataMcGraw-Hill.
5. Foley, J.D., Van Dam, A.: Fundamentals of Interactive Computer Graphics, Addison Wesley.
6. Hearn, D., Baker, and P.M.: Computer Graphics, Prentice-Hall.
7. Tosijasu, L.K.: Computer Graphics, Springer Verlog.
8. Rogers, D.F. McGraw Hill: Mathematical Elements of Computer Graphics,

### **SCHEME FOR PAPER SETTING**

**The question paper will contain total 10 questions out of five units (two questions from each unit). The candidate has to attempt total five questions selecting one question from each unit. Each question will be of 16 marks.**

-X-

## **M.Sc. IT - FOURTH SEMESTER**

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: May 2020, 2021, 2022	Int. Assessment = 20
<b>COURSE NO: MSCIT-403</b>	Total Marks = 100
<b>COURSE TITLE: PROGRAMMING IN VB.NET</b>	

### **UNIT-I**

Introduction to VB.NET, Event Driven Programming, Need for VB.NET, .NET Framework, .NET Architecture, The Just-In-Time Compiler, .NET Framework Class Library Introduction, VB.NET Development Environment, Creating VB.NET applications, Using simple components, Introduction to forms, data types, variables, type conversion, constants, operators and expressions.

12 HOURS

### **UNIT-II**

Conditional Statements and Loops, Procedures, Argument passing mechanism, Arrays, Error Handling, Classes and objects, Properties, methods and events, Constructors and Destructors, Inheritance, Access modifiers : Public, Private, Protected, Friend, Overloading and Overriding, Interfaces, Polymorphism.

12 HOURS

### **UNIT-III**

Windows Applications, Windows Forms, Text Boxes, Buttons, Labels, Check Boxes, and Radio Buttons, List Boxes, Combo Boxes, Picture Boxes, Scrollbars, Splitters, Timer, Menus, Built-in Dialogs, Image List, Tree Views, List Views, Toolbars, Status Bar and Progress bars.

12 HOURS

### **UNIT-IV**

Database Connectivity, Connection Objects, Command Objects, Data Adapters, Datasets, Data Reader, Connection to database with Server Explorer, Multiple Table Connection, Data binding , Navigating Data Source, Data Grid View, Data form wizard, Data Validation.

12 HOURS

### **UNIT-V**

File handling using FileStream, StreamWriter, StreamReader, BinaryReader, BinaryWriter classes, File and Directory Classes.

Introduction to Crystal Reports, Connection to Database, Table, Queries, Building Report, Modifying Report, Working with formula fields, Parameter fields, SQL in Crystal Report.

12 HOURS

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: May 2020, 2021, 2022	Int. Assessment = 20
<b>COURSE NO: MSCIT-403</b>	Total Marks = 100
<b>COURSE TITLE: PROGRAMMING IN VB.NET</b>	

### **SUGGESTED READINGS:**

- 1) Francesco Balena, "Programming Microsoft Visual Basic.NET", Microsoft Press.
- 2) Steven Holzner et al., "Visual Basic 2005 Programming – Black Book", Dreamtech Press.
- 3) Steven Holzner, Bob Howell, "ADO.NET Programming in Visual Basic .NET", Prentice Hall.
- 4) Kevin Goff , Rod Paddock, "Pro VS 2005 Reporting using SQL Server and Crystal Reports", APress
- 5) George Peck, "The Complete Reference- Crystal Reports", Tata McGraw Hill

### **SCHEME FOR PAPER SETTING**

**The question paper will contain total 10 questions out of five units (two questions from each unit). The candidate has to attempt total five questions selecting one question from each unit. Each question will be of 16 marks.**

-X-

## **M.Sc. IT - FOURTH SEMESTER**

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: May 2020, 2021, 2022	Int. Assessment = 20
<b>COURSE NO: MSCIT-404</b>	Total Marks = 100
<b>COURSE TITLE: ANDROID PROGRAMMING</b>	

### **UNIT-I**

#### Android Fundamentals

Introduction to Android and Eclipse, Dalvik Virtual Machine & .apk file extension, Basic Building blocks - Activities, Services, Broadcast Receivers & Content providers, UI Components - Views & notifications, Android API levels (versions & version names). Android Debug Bridge (adb) tool.

12 HOURS

### **UNIT-II**

#### Building Application Framework

Using the Android Documentation, Introduction to Android Manifest File, Debugging Applications with DDMS, Working with the Android Using Other Android Tools, Designing a Typical Android Application Using the Application Context, Working with Activities, Working with Intents. Working with Dialog, Using Dialogs to Collect User Input.

12 HOURS

### **UNIT-III**

#### Application Enrichment with Powerful Android Features

Adding Support for Location-Based Services, Adding Network Support, Adding More Network Support, Adding Social Features, Creating a Home Screen App Widget, Working with Files.

12 HOURS

### **UNIT-IV**

#### Adding More Features to Android Application

Internationalizing Android Application, Designing Advanced User Interfaces, Working with Multimedia, Working with 2D and 3D Graphics, Testing Android Applications, Accessing Underlying Device Hardware.

12 HOURS

### **UNIT-V**

#### Debugging and Publishing Android Application

Debugging the Android Application, Testing Android Application, Introduction to Android Market(Google Play Store), Publishing Android Application.



12 HOURS

Duration of the Examination = 3 hours	Theory Exam. = 80
Examination to be held: May 2020, 2021, 2022	Int. Assessment = 20
<b>COURSE NO: MSCIT-404</b>	Total Marks = 100
<b>COURSE TITLE: ANDROID PROGRAMMING</b>	

### **SUGGESTED READINGS :**

1. Android Programming for Beginners, by John Horton, Packt Publishing Limited, 2015.
2. Android Application Development in 24 Hours, Sams Teach Yourself (4th Edition) by Carmen Delessio, Lauren Darcey, Shane Conder, Sams Publishing, 2015.
3. Android Programming: The Big Nerd Ranch Guide, Big Nerd Ranch Guides; 3 edition, 2017.
4. Android App Development for Dummies by Michael Burton, Wiley; Third edition, 2015.
5. Head First Android Development by Dawn Griffiths, David Griffiths, O'Reilly; 1 edition, 2015.
7. Android wireless application development ,2<sup>nd</sup> edition by shane conder ,Lauren darcey -Addison -Welsey
8. Android Application Development by Rick rogers, John Lombardo - O'Reilly
9. Professional Android 2 application development by Reto Meier -Wrox

### **SCHEME FOR PAPER SETTING**

**The question paper will contain total 10 questions out of five units (two questions from each unit). The candidate has to attempt total five questions selecting one question from each unit. Each question will be of 16 marks.**

-X-

**M.Sc. IT - FOURTH SEMESTER**

Total Marks = 200

No. of Credits = 8

Examination to be held: May 2020, 2021, 2022

Internal Evaluation = 100 Marks

External Evaluation = 100 Marks

***COURSE NO: MSCIT450***

***PRACTICAL***

**Practical in this course shall be based on all above courses. A mini project shall be assigned to the students in addition to the regular assignments.**

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