

Fundamental Of Computer (B.VOC 1001)

TIME - 3 hr

FULL MARKS - 70

CREDIT - 4

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1:

Definition of Electronic Digital Computer, History, Generations (Hardware & Software), Characteristic and Applications of Computers , Translators, Interpreters, Assembler, Computer Languages, Generation of Languages , Introduction to 4 GLS CPU, Peripherals (I / O), Storage Media. [Q 2]

UNIT 2:

Types of Software : System software, Application software and its applications.
The Operating Systems such as DOS, Windows 9X, Unix/Linux, Windows 2000 and server OS.
[Q 2]

UNIT 3:

Scientific, Business, Educational Entertainment applications, Industries Automation and weather forecasting. Awareness of IT Projects in India : ERNET, NICNET, etc. [Q 2]

UNIT 4:

Windows, Microsoft Word, Excel and Power Point. [Q 2]

SUGGESTED TEXTBOOKS & REFERENCES :

- (1.) Leon. A. & Leon. M "Foundations of Information Technology"
- (2.) YADAV, D.S. " Foundations of Information Technology", New Age International Publishers
- (3.) JAIN V.K. "Foundations of Information Technology and Computer Programming", S.K. Kataria & Sons

C Programming (B.VOC 1002)

TIME - 3 hr

FULL MARKS - 70

CREDIT - 4

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1:

Features of C and its Basic Structure, Simple C programs, Constants, Integer Constants, Real Constants, Character Constants, String Constants, Backslash Character Constants, Concept of an Integer and Variable, Rules for naming Variables and assigning values to variables Arithmetic Operators, Unary Operators, Relational and Logical Operators, The Conditional Operator, Library Functions, Bitwise Operators, The Increment and Decrement Operators, The Size of Operator, Precedence of operators. Floating-point Numbers, Converting Integers to Floating-point and vice-versa, Mixed-mode Expressions, The type cast Operator, The type char, Keywords, Character Input and Output, Formatted input and output, The gets() and puts() functions, Interactive Programming. [Q 2]

UNIT 2:

The goto statement, The if statement, The if-else statement, Nesting of if statements, The conditional expression, The switch statement, The while loop, The do...while loop, The for loop, The nesting of for loops, The break statement and continue statement. One Dimensional Arrays, Passing Arrays to Functions, Multidimensional Arrays, Strings

UNIT 3:

Basics of Pointers, Pointers and One-dimensional Arrays, Pointer Arithmetic, Pointer Subtraction and Comparison, Similarities between Pointers and One-dimensional Arrays, Null pointers, Pointers and Strings, Pointers and two-dimensional arrays, Arrays of Pointers Basics of Structures, Arrays of Structures, Pointers to Structures, Self-referential Structures, Unions. [Q 2]

UNIT 4:

Function Philosophy, Function Basics, Function Prototypes, and Passing Parameters: Passing Parameter by value and Passing Parameter by reference, passing string to function, Passing array to function, Structures and Functions Recursion
Storage Classes and Visibility, Automatic or local variables, Global variables, Static variables, External variables. File Inclusion, Macro Definition and Substitution, Macros with Arguments, Nesting of Macros, Conditional Compilation. [Q 2]

TEXT BOOK:

1. E. Balagurusamy – Programming in ANSI C, 3rd Edn. , TMH, New Delhi ; 2004
Reference:

REFERENCE BOOK:

1. Programming with C, B.S.Gottfried (TMH)
2. Y. Kanetkar – Let us C, 4th Edition, BPB Publication , New Delhi; 2002

DATABASE MANAGEMENT SYSTEMS (B.VOC 1003)

TIME-3 hr

FULL MARKS-70

CREDIT-4

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1:

Database System Applications: A Historical Perspective, File Systems versus a DBMS, the Data Model, Levels of Abstraction in a DBMS, Data Independence, Structure of a DBMS
Introduction to Database Design: Database Design and ER Diagrams, Entities, Attributes, and Entity Sets, Relationships and Relationship Sets, Additional Features of the ER Model, Conceptual Design With the ER Model

[Q 2]

UNIT 2:

Introduction to the Relational Model: Integrity constraint over relations, enforcing integrity constraints, querying relational data, logical data base design, introduction to views, destroying/altering tables and views. Relational Algebra, Tuple relational Calculus, Domain relational calculus.

[Q 2]

UNIT 3:

SQL: QUERIES, CONSTRAINTS, TRIGGERS: form of basic SQL query, UNION, INTERSECT, and EXCEPT, Nested Queries, aggregation operators, NULL values, complex integrity constraints in SQL, triggers and active data bases.

Schema Refinement: Problems caused by redundancy, decompositions, problems related to decomposition, reasoning about functional dependencies, FIRST, SECOND, THIRD normal forms, BCNF, lossless join decomposition, multi-valued dependencies, FOURTH normal form, FIFTH normal form.

[Q 2]

UNIT 4:

Transaction Concept, Transaction State, Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Recoverability, Implementation of Isolation, Testing for serializability, Lock Based Protocols, Timestamp Based Protocols, Validation- Based Protocols, Multiple Granularity, Recovery and Atomicity, Log-Based Recovery, Recovery with Concurrent Transactions.

[Q 2]

TEXT BOOKS:

Database Management Systems, Raghurama Krishnan, Johannes Gehrke, Tata McGraw Hill
3rd Edition

Database System Concepts, Silberschatz, Korth, McGraw hill, V edition.

REFERENCES BOOKS:

Database Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th
Edition.

Fundamentals of Database Systems, ElmasriNavrate, Pearson Education

Introduction to Database Systems, C. J. Date, Pearson Education

Oracle for Professionals, The X Team, S.Shah and V. Shah, SPD.

Database Systems Using Oracle: A Simplified guide to SQL and PL/SQL, Shah, PHI.

Fundamentals of Database Management Systems, M. L. Gillenson, Wiley Student Edition.

COMMUNICATION SKILL (B.VOC 1004)

TIME-3 hr

FULL MARKS-70

CREDIT-6

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1: Communication Overview

Introduction to Communication, Development of communication, Principles of Communication, Process of Communication, Barriers to Communication, Aids to Communication, The Ten Commandments, The Listening Process, Difference between Listening and Hearing, Types of Listening, Deterrents to the Listening Process, Factors that help in Listening, Effective Presentations, Seven steps to a Successful Presentation.[Q-2]

UNIT 2: Grammar and comprehension

Syntax - Use of Articles in Science, The Verbs, The Prepositions, Tense, Active and Passive Construction, Common Errors, Phrase Substitution, Double blanks in a Sentence, Sentence Rearrangement, Closure Test, Antonyms and Synonyms, Comprehensions. [Q-2]

UNIT 3: Business correspondence

Drafting official and business letter, Circulars and official order instructions, Drafting minutes and agenda of the meeting, Formal report, Expressing ideas within a restricted word limit(Precise Writing), Paragraph writing, Job Application Letter, Technical description of things and processes, Use of Charts, Graph and Table. [Q-2]

UNIT 4: Organizational Communication

Communication in an Organization, Types of Communication; Meetings; Memo; Circulars and Notices; Report Writing. [Q-2]

TEXT BOOK:

Effective Communication Skills: The Foundations for Changeby John Nielsen

REFERENCE BOOKS:

Business Correspondence & Report Writing, Sharma, TMH Pub.
Business Communication, Kaul, PHI Publication.

FUNDAMENTALS of MATHEMATICS (B.VOC 1005)

TIME-3 hr

FULL MARKS-70

CREDIT-6

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1:

The Set theory-Set, types of sets, subsets and its properties. [Q-1]

UNIT 2:

Limits of functions (basic idea without analytic definition). Derivatives of functions. [Q-2]

UNIT 3:

The binomial theorem for positive index, formula for negative integral index and fractional index. Logarithm (Definition, laws of logarithm and use of log table). [Q-2]

UNIT 4

Differentiation of function of functions, Trigonometric, logarithmic exponential and inverse circular functions. Intergration (general introduction, significance and application for simple algebraic and trigonometric functions). [Q-2]

UNIT 5:

Basic Integration and its application. [Q-1]

TEXT BOOK:

Lalji Prasad

C Programming LAB (B.VOC P1006)

FULL MARKS-50

CREDIT-2

Experiment problems of C programming lab will be from the theory classes of B.Voc 1002.

Database Management LAB (B.VOC P 1007)

FULL MARKS-50

CREDIT-2

Experiment problems of DBMS lab will be from the theory classes of B.Voc 1003.

Fundamentals of Computer LAB (B.VOC P1008)

FULL MARKS-50

CREDIT-2

Experiment problems of Fundamentals of Computer lab will be from the theory classes of B.Voc 1001.

DATA STRUCTURE USING C (B.VOC 2001)

TIME-3 hr

FULL MARKS-70

CREDIT-4

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1: INTRODUCTION TO DATA STRUCTURE

Definition of Data Structure, Type of Data Structure, single and multidimensional arrays;. [Q-2]

UNIT 2: LISTS

Introduction to linked lists; Linked list types, operations on linked list. [Q-2]

UNIT 3: STACKS AND QUEUES

Introduction and primitive operations on stack; Stack application; Infix, postfix, prefix expressions; Evaluation of postfix expression; Conversion between prefix, infix and postfix, introduction and primitive operation on queues. [Q-2]

UNIT 4: TREES

Introduction, Tree terminology; binary tree, BST, Recursive algorithms for tree operations such as traversal, insertion, deletion,.AVI Tree ,B Tree [Q-1]

UNIT 5: SORTING & SEARCHING TECHNIQUES

Sorting : Insertion sort, Selection sort, Merge sort, Bubble sort, Heap Sort
Searching Techniques: Linear search & Binary search

TEXT BOOK:

Seymour Lipschutz, Data Structure With C, Schaum's Outline Series, TMH, 2017

REFERENTIAL BOOKS:

E.Horowiz and S.Sahani, "Fundamentals of Data structures", Galgotia Book source Pvt. Ltd., 2003

R.S.Salaria, "Data Structures & Algorithms", Khanna Book Publishing Co. (P) Ltd., 2002

Y.Langsam ET. Al., "Data Structures using C and C++", PHI, 1999

Object Oriented Programming using Java (B.VOC 2002)

TIME-3 hr

FULL MARKS-70

CREDIT-4

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1: EVOLUTION AND OVERVIEW

How Java differs from C and C++, Java Tokens, Java Statements, Implementing a Java Program, Java Virtual Machine, Command Line Arguments, Constants, Variables, Data Types, Scope of Variables, Symbolic Constants, Type Casting. Operators, Mathematical Functions, Decision Making, The switch Statement, The?: Operator, Looping Statements. [Q-2]

UNIT 2: CLASSES & OBJECTS

Defining a Class, Adding Variables, Adding Methods, Creating Objects, Accessing Class Members, Constructors, Methods Overloading, Static Members, Nesting of Methods, Inheritance: Extending a Class, Overriding Methods, final Variables and Methods, Final Classes, Finalizer Methods, Abstract Methods and Classes, Visibility Control. [Q-2]

UNIT 3: ARRAYS, STRING AND VECTORS & INTERFACES

Arrays, Strings, Vectors, Wrapper Classes. Multiple Inheritances: Defining Interfaces, Extending Interfaces, implementing Interfaces, Accessing Interface Variables. [Q-2]

UNIT 4: PACKAGES & MULTITHREADED PROGRAMMING

Java API Packages, Using system Packages, Naming Conventions, Creating Packages, Accessing a Packages, Using a Package, Adding a Class to a Package, Hiding Classes. Threads, Extending the Thread Class, Stopping and Blocking a Thread, Life Cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, and Synchronization. [Q-2]

TEXT BOOK:

E. Balagurusamy, Programming with Java, a Primer Second Edition, Tata McGrawHill, New Delhi.

REFERENCE BOOKS:

H.M.Deitel & P.J.Deitel- JA V A- How to Program, 5th Edn, Pearson Education, NewDelhi-2004.
P.Naughton and H. Schildt-JAVA: The Complete Reference, TMH, New Delhi 2005.

Data Communication & Computer Networks (B.VOC 2003)

TIME-3 hr

FULL MARKS-70

CREDIT-4

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1:

Introduction to Computer Network: Definition and Uses of Computer Network, Criteria for a Data Communication Network, Classification of Computer network, Network Architecture, OSI Reference Model. Data communication: Data Communication, Transmission Impairments, Transmission Medium. [Q-2]

UNIT 2:

Data Encoding: Line Encoding, Types of Line Coding, Analog-to-Digital Conversion- Pulse code modulation (PCM), Delta modulation (DM); Transmission Modes, Wired LANs: Ethernet: IEEE 802 Standards, Standard Ethernet, Changes in the Standard, Fast Ethernet, Gigabit Ethernet. [Q-2]

UNIT 3:

Unicast Routing: Routing Characteristics, Routing Algorithms, Comparison of Routing Algorithms, Broadcast and Multicast Routing: Broadcast Routing, Multicast Routing, Routing in Ad Hoc Networks. [Q-1]

UNIT 4: COMPUTER NETWORK

Network Topology, Performance of Network, Network Classification, Advantages & Disadvantages of Network, Transmission Media (guided and unguided), Network Architecture. Need for Data Link Control, Flow Control & Error Control: Flow control mechanism, Error Detection and Correction techniques. [Q-2]

UNIT 5: NETWORK LAYER

Routing, Congestion control, Internetworking principles, Internet Protocols: IPv4 packet format, Hierarchical addressing sub netting. TRANSPORT LAYER: Process to Process Delivery, TCP, UDP, TCP connection. [Q-1]

TEXT BOOK:

Prakash C. Gupta -Data Communications & Computer Networks, PHI, New Delhi.

REFERENCE BOOKS:

William Stallings- Data & Communications, 6th Edition, Pearson Education.
Tanenbaum- Computer Networks, 3rd Edition, PHI, New Delhi

FINANCIAL ACCOUNTING (B.VOC 2004)

TIME-3 hr

FULL MARKS-70

CREDIT-6

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1:

Meaning and scope of Accounting: -Need, development, and definition of Accounting, Book – keeping and Accounting, Basic Principles of accounting, Preparation and presentation of financial statement – Nature and limitation of financial statement – Interpretation of financial statement.

UNIT 2:

According transactions:- Accounting cycle ,journal – Rules of debit and credit , compound Journal entry, opening entry ,Relationship between Journal and Ledger ,Rules regarding posting ,Trail balance ,subdivision of journal.

UNIT 3:

Three Column Cash book.

UNIT 4:

Rectification of errors, classification of errors, location of errors, Rectification of errors , suspense account.

S.M. Shukla- Advanced Accounts

N.C. Shukla&Grewal – Advanced Accounts

R.C. Gupta – Advanced Accounts

PRINCIPLES OF MANAGEMENT (B. VOC 2005)

TIME-3 hr

FULL MARKS-70

CREDIT-6

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1:

Introduction to Management:

Definition, Nature, Role of Managers, Managerial skills and Levels, Basic Functions of Management

UNIT 2:

Evolution of Management Theory:

Scientific Management, Theory of Henry Fayol, Fayol's vs Taylor's comparison. Behavioral Model of Management, Modern Theories of Management (Systems Management School, Situational Approach School)

UNIT 3:

Planning:

Definition, Nature, Importance, Types of Planning (from Koontz-Weihrich), Steps in Planning (from Koontz-Wiehrich), Planning Premises

Organising:

Concept, Definition, Formal and Informal Organisation, Organisational Structure (Functional Organisation, Product/ Market Organisation and Matrix Structure), Span of Management

UNIT 4:

Staffing

Definition, Factors affecting Staffing—The External and Internal Environment, Identification of Job Requirements, Job Design, Recruitment, Selection

Leadership:

Definition, Leadership Characteristics

UNIT 5:

Directing:

Meaning of Motivation, Primary Motives, Secondary Motives, General Motives

Controlling:

Meaning, Need of Control, Control Process, Traditional Control Devices

TEXT BOOKS:

Koontz, H. and Weihrich, H, Essentials Of Management (Tata McGraw Hill: New Delhi)

Bose, D. Chandra, Principles of Management and Administration, (Prentice Hall India: New Delhi)

Stoner, Freeman and Gilbert, Management (Prentice Hall of India: New Delhi)

Java Programming LAB (B.VOC P2006)

FULL MARKS-50

CREDIT-2

Experiment problems of Java Programming Lab will be from the theory classes of B.Voc 2002.

Data Structure LAB (B.VOC P2007)

FULL MARKS-50

CREDIT-2

Experiment problems of Data Structure Lab will be from the theory classes of B.Voc 2001.

Accounting LAB (B.VOC P2008)

FULL MARKS-50

CREDIT-2

Experiment problems of Accounting Lab will be from the theory classes of B.Voc 2004.

Web Development (B.VOC 3001)

TIME-3 hr

FULL MARKS-70

CREDIT-4

The question paper shall consists of two sections: A and B. Section A will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. Section B will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1: INTERNET BASICS

Basic concepts, Communication on the Internet, Internet Domains, Internet Server Identities, Establishing Connectivity on the Internet, Client IP Address, Transmission Control Protocol, Web Server, Web Client, Domain Registration. [Q-2]

UNIT 2: JAVA SCRIPT

Java Script in Web Pages, Advantages of Java Script, Advantages of Java Script, Data Types and Literals, Type Casting, Java Script Array, Operators and Expression, Conditional Checking, Function, User Defined Function. [Q-2]

UNIT 3: UNDERSTANDING XML

SGML, XML, XML and HTML, Modeling XML Data, Styling XML with XSL, XHTML. [Q-2]

UNIT 4: CREATION OF DYNAMIC WEB PAGES USING JSP

Dynamic Web Page, Introduction of JSP, Pages Overview, JSP Scripting, Standard Action, Page Directive, Include Directive. [Q-2]

TEXT BOOKS:

Ivan Bay Ross – Web Enable Commercial Application Using HTML, DHTML, BPB Publication

REFERENCE BOOK & WEBSITE:

Java Server Side Programming – WROX Publication

Michel Morrison – HTML and XML for Beginners, PHI, New Delhi – 2001

H.M Dietal and P.J Dietal – Java How to Program, PHI, New Delhi – 2005

Python Programming (B.VOC 3002)

TIME-3 hr

FULL MARKS-70

CREDIT-4

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1: Introduction to Python Programming Language

Programming Language, History and Origin of Python Language, Features of Python, Limitations, Major Applications of Python, Getting, Installing Python, Setting up Path and Environment Variables, Running Python, First Python Program, Python Interactive Help Feature, Python differences from other languages. [Q-1]

UNIT 2: Python Data Types & Input/Output

Keywords, Identifiers, Python Statement, Indentation, Documentation, Variables, Multiple Assignment, Understanding Data Type, Data Type Conversion, Python Input and Output Functions, Import command. Operators and Expressions: Operators in Python, Expressions, Precedence, Associativity of Operators, Non Associative Operators. Control Structures: Decision making statements, Python loops, Python control statements. [Q-1]

UNIT 3: Python Native Data Types

Numbers, Lists, Tuples, Sets, Dictionary, Functions & Methods of Dictionary, Strings (in detail with their methods and operations). Python Functions: Functions, Advantages of Functions, Built-in Functions, User defined functions, Anonymous functions, Pass by value Vs. Pass by Reference, Recursion, Scope and Lifetime of Variables. [Q-2]

UNIT 4: Python Modules

Module definition, Need of modules, Creating a module, Importing module, Path Searching of a Module, Module Reloading, Standard Modules, Python Packages. Exception Handling: Exceptions, Built-in exceptions, Exception handling, User defined exceptions in Python. [Q-2]

UNIT 5: File Management in Python

Operations on files (opening, modes, attributes, encoding, closing), read() & write() methods, tell() & seek() methods, renaming & deleting files in Python, directories in Python. Classes and Objects: The concept of OOPS in Python, Designing classes, Creating objects, Accessing attributes, Editing class attributes, Built-in class attributes, Garbage collection, Destroying objects. [Q-2]

TEXT BOOKS:

Programming in Python, Pooja Sharma, BPB Publications, 2017.

Core Python Programming, R. Nageswara Rao, 2nd Edition, Dreamtech.

Python in a Nutshell, A. Martelli, A. Ravenscroft, S. Holden, OREILLY.

SOFTWARE ENGINEERING (B.VOC 3003)

TIME-3 hr FULL MARKS-70 CREDIT-4

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1: Introduction to Software Engineering

Software Engineering – A layered Technology Characteristics, and SDLC Model, Waterfall Model, Prototype Model, Incremental Process Models, Spiral Model., [Q-2]

UNIT 2: Requirement & Design Engineering

Requirement Analysis and Software Requirement Specifications, Requirements Gathering Methods, Data Flow Diagrams, Data Dictionaries, Entity-Relationship Diagram, Software Design Introduction, Coupling and Cohesion. [Q-1]

UNIT 3: Testing Strategies and Testing Tactics

Strategic Approach to software Testing, Verification and Validation Testing, White Box Testing, Basic Path Testing, Control Structure Testing, Black Box Testing, UNIT Testing, Integration Testing, Bottom-up and Top-down Testing, System Testing. [Q-2]

UNIT 4: Software Metrics and Project Management

Issues in Project Management, Management Functions, Software Project Management Plan, Software Management Structure, Software Project Complexity, Software Cost Estimation Techniques, The COCOMO Model, Project Scheduling, Software Project Planning. [Q-2]

UNIT 5: Software Quality and Configuration Management

Software Quality Concepts, Software Quality Assurance and Quality Control, Software Reliability, Software Configuration Management, SCM Repository, and SCM Process. [Q-1]

TEXT BOOK:

Roger S. Pressiman – "Software Engineering – A Practitioner's Approach", 6th Edn., McGraw Hill.

REFERENCE BOOKS:

John Wiley and Sons – "Software Engineering – Principles and Practice", 2nd Edn., Haus Van Vliet.

Ian Sommerville – "Software Engineering", 7th Edn., Pearson Education.

Karl E. Wiegers – Software Requirements (2nd Edition)

Grady Booch, et.c. Object-Oriented Analysis and Design with Applications (3rd Edition)

CemKaner, Testing Computer Software (2nd Edition)

COMPUTER ORIENTED NUMERICAL METHODS (B.VOC 3004)

TIME-3 hr FULL MARKS-70 CREDIT-6

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1: ERRORS IN NUMERICAL CALCULATIONS

Numbers and their accuracy, Errors and their Computations- Absolute, Relative and Percentage, General Error Formula. [Q-2]

UNIT 2: SOLUTION OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS

Introduction, Bisection method, Iteration method, Method of False Position, Newton- Raphson method. [Q-1]

UNIT 3: INTERPOLATION

Introduction, Errors in Polynomial Interpolation, Finite Differences-Forward, Backward and Central, Detection of errors using Difference tables, Differences of a Polynomial, Newton's formulae for Interpolation, Central Difference Interpolation Formula- Gauss's Central Difference Formula, Interpolation with unevenly spaced points, Lagrange's Interpolation Formula, Divided Differences and their properties- Newton's General Interpolation Formula. [Q-2]

UNIT 4: NUMERICAL DIFFERENTIATION AND INTEGRATION

Introduction, Numerical Differentiation and Errors, Numerical Integration – Trapezoidal Rule, Simpson's 1/3 Rule, Simpson's 3/8 Rule. [Q-2]

UNIT 5: NUMERICAL SOLUTION OF LINEAR SYSTEM OF EQUATIONS

Direct Methods- Matrix Inversion Method, Gauss-Jordan Method, Gauss Elimination Method, Iterative Method- Gauss- Jacobi Method, Gauss-Seidel Method.

Taylor's Series, Euler's method, Modified Euler's method, Runge-Kutta method of 2nd and 4th order. [Q-1]

TEXT BOOK:

S.S.Sastry - Introductory methods of Numerical Analysis, 4th Edition, Prentice Hall of India, New Delhi, 2006

REFERENCE BOOKS:

V.N.Vedamurthy et.al.- Numerical Methods, Vikas Publishing House, New Delhi, 2005.

B.S.Grewal- Numerical Methods in Engineering & Science, Khanna Publishers, Delhi, 2005.

Environmental Science (B.VOC 3005)

TIME-3 hr FULL MARKS-70 CREDIT-6

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1:

Environmental Awareness, Ecology And Environment: Multidisciplinary nature of environmental science, Definition, scope, importance and need for public awareness. Concept of an ecosystem, structure and function of an ecosystem, producer, consumer and decomposer, energy and nutrient flow biogeochemical cycles, food chain, food web, ecological pyramid. [Q-2]

UNIT 2:

Environmental Pollution Segments of environment, sources, pathways and fate of environmental pollutants, causes of environmental pollution, physical, chemical, and biological transformation of pollutants, population explosion, environment and human health, human rights, value education, women and child welfare. [Q-2]

UNIT 3:

Air Pollution Various segments of atmosphere and their significance, classification of air pollutions, toxic effects, sampling and analysis, stationary and mobile emission, sources and their control, photochemical smog, sulphurous smog, green house effect, global warming, ozone depletion, Air (prevention and control of pollution) Act. [Q-2]

UNIT 4:

Water Pollution Water resources sources of water pollution, various pollutants, their toxic effect, portability of water, municipal water supply, disinfection, characteristics of waste water, primary and secondary waste water treatment, BOD and COD measurement and their significance, rain water harvestings, water shed management, Water (pollution and control) Act. [Q-2]

RECOMMENDED BOOKS:

De A. K., Environmental Chemistry, Wiley Eastern Ltd.

Miller T.G.Jr., Environmental Science, Wadsworth Publishing Co. (TB)

Sharma B.K., 2001, Environmental Chemistry, Goel Publishing House, Meerut

Odem, E.P., 1971, Fundamentals of Ecology, W.B.Sannders Co. U.S

Python LAB (B.VOC P3006)

FULL MARKS-50 CREDIT-2

Experiment problems of the Python lab will be from the theory classes of B.Voc3002.

Web Development LAB (B.VOC P3007)

FULL MARKS-50 CREDIT-2

Experiment problems of Web Development lab will be from the theory classes of B.Voc 3001.

Software Engineering LAB (B.VOC P3008)

FULL MARKS-50 CREDIT-2

Experiment problems of the Software Engineering lab will be from the theory classes of B.Voc 3003.

Advance Java (4001)

TIME-3 hr FULL MARKS-70 CREDIT-4

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

Unit 1:

Object-oriented Programming, Paradigm, Basic Concepts of Object-oriented Programming, Benefits of OOPs, Application of OOP, Data Types, Operators, Control Structure and looping. Classes and Objects: Defining a Class, Adding Variables and Methods, Creating Objects, Accessing Class Members, Constructors, Methods Overloading, Static Members, Nesting of Methods, Arrays within a Class, Memory Allocation for Objects, Static Data Member, Static Member Functions, Arrays of Objects, Objects as Function Arguments. [Q-2]

Unit 2:

Inheritance: Extending a Class, Overriding Methods, Final Variables and Methods, Final Classes, Finalize Methods, Abstract methods and Classes, Visibility Control. Interface & Packages: One-Dimensional & two Dimensional Array, Strings, Vectors, wrapper Classes, Defining Interface, Extending Interface, Implementing Interface, Accessing Interface, System Packages, Using System Package, Adding a Class to a Package, Hiding Classes. [Q-2]

Unit 3:

Creating Threads. Extending the Threads Class, Stopping and Blocking a Thread, Life-Cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementing the Runnable Interface. [Q-1]

Unit 4:

Programming with the JFC, Swing API Components, component Class, Windows, Dialog Boxes, and Panels, Labels, Buttons, and Check Boxes, Menus, Toolbars, and Actions, Sliders, Spinners, Progress Bars, and Scrollbars, Lists and Combo Boxes, Text-Entry Components, Color and File Choosers, Tables and Trees, Printing with the 2D API, Java Print Service API. [Q-2]

Unit 5:

Introduction, Best Practices for Programming for Databases, JDBC Drivers for RDBM Systems, SQL to Java Type Mappings, Understanding the Database used in this chapter, Using the java.sql API, Coding Transactions, Working with Sockets. [Q-1]

Text Book:

Wigglesworth & McMillan – Java™ Programming Advanced Topics, 3rd Edn., India Edition, Thomson Education, New Delhi, 2007

Richard A. Johnson, "An Introduction to Java Programming and Object-Oriented Application Development", 1st Edn., Thomson Learning, New Delhi – 2007

Reference Books:

Simply Java and Introductions to JAVA Programming, James R Levenick

Java 6 Programming Black Book, Dream Teach

Cloud Computing (B.VOC 4002)

TIME-3 hr FULL MARKS-70 CREDIT-4

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

Unit 1:

Cloud Computing definition, Types of cloud, Cloud services: Benefits and challenges of cloud computing, Evolution of Cloud Computing, Applications cloud computing, Business models around Cloud – Major Players in Cloud Computing - Issues in Cloud - Eucalyptus - Nimbus - Open Nebula, CloudSim. [Q-2]

Unit 2:

Cluster Computing, Grid Computing, Grid Computing Versus Cloud Computing, Key Characteristics of Cloud Computing. Cloud Models: Benefits of Cloud Models, Public Cloud, Private Cloud, Hybrid Cloud, Community Cloud, Shared Private Cloud, Dedicated Private Cloud, and Dynamic Private Cloud. [Q-2]

Unit 3:

Types of Cloud services: Software as a Service - Platform as a Service – Infrastructure as a Service - Database as a Service - Monitoring as a Service – Communication as services. Service providers - Google App Engine, Amazon EC2, Microsoft Azure, Sales force. [Q-2]

Unit 4: Virtualization:

Basics of Virtualization - Types of Virtualization - Implementation Levels of Virtualization - Virtualization Structures - Tools and Mechanisms - Virtualization of CPU, Memory, I/O Devices - Virtual Clusters and Resource management – Virtualization for Data-center Automation. Introduction to MapReduce, GFS, HDFS, Hadoop Framework. [Q-2]

Text Book:

Cloud Computing "A Practical Approach" Anthony T. Velte, Toby J. Velte, Robert Elsenpeter. McGraw-Hill.

Reference Books:

2. Kumar Saurabh, "Cloud Computing – insights into New-Era Infrastructure", Wiley India, 2011.
3. Kai Hwang, Geoffrey C Fox, Jack G Dongarra, "Distributed and Cloud Computing, From Parallel Processing to the Internet of Things", Morgan Kaufmann Publishers, 2012.
4. John W. Rittinghouse and James F. Ransome, "Cloud Computing: Implementation, Management, and Security", CRC Press, 2010

Computer Organization (B.VOC 4003)

TIME-3 hr FULL MARKS-70 CREDIT-4

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

Unit 1:

Axioms and laws of Boolean algebra, Reduction of Boolean expressions, Logic gates, Conversion between canonical forms, Karnaugh map (4 variable), Combinational Circuits: Half Adder, Full adder, Decoder, Encoder, Multiplexer, Sequential Circuits: Flip-flop, SR, JK, T, D-Latch, Master slave. [Q-2]

Unit 2:

Comparison of Computer Organization & Architecture, Von-Neumann concept, Computer Components and Functions, Interconnection Structures. Bus Interconnections, Input/Output: Programmed I/O, Interrupt Driven I/O, Direct Memory Access. [Q-2]

Unit 3:

Classification and design parameters, Memory Hierarchy, RAM, SRAM and DRAM, Associative Memory. Cache Memory: Design Principles, Cache Memory mappings, Cache performance, Cache Coherence. [Q-2]

Unit 4:

Instruction Formats, Instruction Sets, Addressing Modes, Addressing Modes Examples with Assembly Language [8085/8086 CPU], Processor Organization, Structure and Function. Register Organization, Instruction Cycle, Multiplication algorithm (Booth's), Divide algorithms (Restoring & Non-Restoring), Floating point representation. Control Unit: Micro-Operations, Functional Requirements, Processor Control, Hardwired Implementation, Micro-programmed Control. [Q-2]

Text Book:

William Stallings - Computer Organization & Architecture: Designing for Performance, 7th Edn, Pearson Education, New Delhi-2006.

Operating Systems (B.VOC 4004)

TIME-3 hr FULL MARKS-70 CREDIT-6

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

Unit 1:

Introduction to OS Operating system functions, evaluation of O.S., Different types of O.S.: batch, multi-programmed, time-sharing, real-time, distributed, parallel. System Structure: Computer system operation, I/O structure, storage structure, storage hierarchy, different types of protections, operating system structure (simple, layered, virtual machine), O/S services, system calls. [Q-2]

Unit 2:

Concept of processes, process scheduling, operations on processes, operating processes, inter-process communication. Process Synchronization: background, critical section problem, critical region, synchronization hardware, classical problems of synchronization, semaphores. Threads: overview, benefits of threads, user and kernel threads. CPU scheduling: scheduling criteria, preemptive & non-preemptive scheduling, scheduling algorithms, multi-processor scheduling. [Q-2]

Unit 3:

System model, deadlock characterization, methods for handling deadlocks, deadlock prevention, deadlock avoidance, deadlock detection, recovery from deadlock. Memory Management: background, logical vs. physical address space, swapping, contiguous memory allocation, paging, segmentation, segmentation with paging. Virtual Memory: background, demand paging, performance, page replacement, page replacement algorithms, allocation of frames, thrashing. [Q-2]

Unit 4:

File concept, access methods, directory structure, file system structure, allocation methods (contiguous, linked, indexed), free-space management (bit vector, linked list, grouping), directory implementation (linear list, hash table), efficiency & performance. I/O Management: I/O hardware, polling, interrupts, DMA, application I/O interface (block and character devices, network devices, clocks and timers, blocking and non-blocking I/O), kernel I/O subsystem (scheduling, buffering, caching, spooling and device reservation, error handling), performance. [Q-2]

Text Book:

1. A. Silberschatz, Galvin,-Operating System Concepts, 6th Edn, John Wiley, Indian Reprint,2003.

Reference Books:

1. C.Cronsley-Operating Systems: A Design-Oriented Approach, TMH, New Delhi, 2002

Artificial Intelligence (B.VOC 4005)

TIME-3 hr FULL MARKS-70 CREDIT-6

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

Unit 1:

Introduction: Overview of Artificial Intelligence - Problems of AI, AI Technique, Tic-Tac-Toe Problem. Intelligent Agents: Agents & Environment, Nature Of Environment, Structure Of Agents, Goal Based Agents, Utility Based Agents, Learning Agents. Problem Solving: Problems, Problem Space & Search: Defining The Problem As State Space Search, Production System, Problem Characteristics, Issues In The Design Of Search Programs. [Q-2]

Unit 2:

Solving Problems By Searching, Problem Solving Agents, Searching For Solutions; Uniform Search Strategies: Breadth First Search, Depth First Search, Depth Limited Search, Bi-directional Search, Comparing Uniform Search Strategies. Heuristic Search Strategies: Greedy Best-First Search, A* Search, Memory Bounded Heuristic Search: Local Search Algorithms & Optimization Problems: Hill Climbing Search, Simulated Annealing Search, Local Beam Search, Genetic Algorithms; Constraint Satisfaction Problems, Local Search For Constraint Satisfaction Problems. Adversarial Search: Games, Optimal Decisions & Strategies in Games, The Mini Max Search Procedure, Alpha-Beta Pruning, Additional Refinements, Iterative Deepening. [Q-2]

Unit 3:

Knowledge Representation Issues, Representation & Mapping, Approaches to Knowledge Representation, Issues in Knowledge Representation. Using Predicate Logic: Representing Simple Fact in Logic, Representing Instant & ISA Relationship, Computable Functions & Predicates, Resolution, and Natural Deduction. Representing Knowledge Using Rules: Procedural Verses Declarative Knowledge, Logic Programming, Forward Verses Backward Reasoning, Matching, Control Knowledge. [Q-2]

Unit 4:

Brief introduction to Syntactic Processing, Semantic Analysis, Discourse & Pragmatic Processing. Robotics: Introduction, Robot hardware, robotic perception, planning to move, planning uncertain movements, robotic software architecture, application domains. [Q-2]

Text Book:

1. Ritch & Knight -Artificial Intelligence, TMH

Reference Books:

1. S. Russel and P. Norvig- Artificial Intelligence: A Modern Approach, Pearson Education.
2. Patterson -Introduction to Artificial Intelligence & Expert Systems, PHI

Advanced Java LAB (B.VOC P4006)

FULL MARKS-50 CREDIT-2

Experiment problems of the Advanced Java lab will be from the theory classes of B.Voc 4001.

Linux LAB (B.VOC P4007)

FULL MARKS-50 CREDIT-2

Experiment problems of the Linux lab will be from the theory classes of B.Voc 4004.

Mini Project (B.VOC P4008)

FULL MARKS-50 CREDIT-2

The Mini Project will be based on the concepts covered in the theory classes of the first four semesters.

Project assign by the faculty/department

Dot NET Framework (B.VOC 5001)

TIME-3 hr FULL MARKS-70 CREDIT-4

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

Unit 1:

NET Framework: Features & Architecture, Common Language Runtime, Common Type System, MSIL, Class Libraries. Event Drive Programming, Methods and Events. Programming into Visual Studio, IDE of VB.NET- Menu Bar, Toolbar, Project Explorer, Toolbox, Properties Window, Form Designer, Form Layout, Immediate Window, ASP & HTML Forms, Introduction to VB.NET and C# Applications, MsgBox Function, InputBox Function, Startup Form. [Q-2]

Unit 2:

Visual Basic .NET Language: Data Types, Operators, Conditionals, Loops, Statements, Variables, Arrays and Dynamic Arrays, Operators, Procedures, Scope, and Exception Handling, Creating Functions, Exception Handling, Using Resume Next and Resume Line, Using On Error GoTo, Windows Forms: Loading, Showing and Hiding Forms, Working with Multiple Forms, Creating Windows Applications, Adding Controls to Forms, Handling Events Multiple Document Interface (MDI) Applications, Dialog Boxes, Controls at Run Time, Mouse Events, Keyboard Events, Beeping, Deploying Applications. [Q-2]

Unit 3:

.NET Tools: Control Class, Text Boxes, Rich Text Boxes, Labels, Link Labels, Buttons, Checkboxes, Radio Buttons, Panels, and Group Boxes, List Boxes, Checked List Boxes, Combo Boxes, and Picture Boxes, Scroll Bars, Splitters, Track Bars, Pickers, Notify Icons, Tool Tips, and Timers, Menus, Built-in Dialog Boxes, and Printing, Image Lists, Tree and List Views, Toolbars, Status and Progress Bars, and Tab Controls. [Q-2]

Unit 4:

Data Access with ADO.NET: Server Explorer Data Adaptors and Datasets, ADO.NET Objects, Data Connection, Dragging Tables, Dataset, Data Grid, Data Adapter Controls, Dataset Schema, MS Jet Database, Relational Databases. Binding Controls to Databases: Simple Binding, Complex Binding, Navigating in Datasets, Data Forms, Handling Databases using Coding, Database Access in Web Applications. [Q-2]

Reference Book:

Steven Holzner VB.Net Programming-Black Book-Dreamtech Publications
EvangelosPetroutsos Mastering VB.Net - BPB Publications
Mathew Macdonald -The Complete Reference Asp.Net- TMH

Professional ASP.Net- Wrox Publication

Stephen Walther Active Server Pages 2.0 (Unleashed) - Techmedia

Eric a. Smith Asp 3 Programming Bible: IDG Books

Data Warehousing & Data Mining [Elective 1] (B.VOC 5002 A)

TIME-3 hr FULL MARKS-70 CREDIT-4

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1:

Data Mining: Introduction, Relational Databases, Data Warehouses, Transactional databases, Advanced database Systems and Application, Data Mining Functionalities, Classification of Data Mining Systems, Major Issues in Data Mining. [Q-2]

UNIT 2:

Data Processing: Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and concept Hierarchy Generation.

Data Mining Primitives, Languages and System Architecture: Data Mining Primitives, DMQL, Architectures of Data Mining Systems. [Q-2]

UNIT 3:

Concept Description & Mining Association Rules: Data Generalization & Summarization – Based Characterization, Analytical Characterization, Mining class Comparisons, Mining Descriptive Statistical Measures in Large Databases.

Mining Association Rules in Large Databases: Association Rule Mining, Single-Dimensional Boolean Association Rules, Multilevel Association Rules from Transaction Databases, Multi Dimensional Association Rules from Relational Databases. [Q-2]

Reference Book:

Data Warehousing Fundamentals for IT Professionals, Second Edition by PaulrajPonniah, Wiley
Data Warehousing, Data Mining, & OLAP - Second Edition by Alex Berson and Stephen J. Smith, Tata McGraw Hill Education

Android Programming [Elective 1] (B.VOC 5002 B)

TIME-3 hr FULL MARKS-70 CREDIT-4

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1:

What is Android? Android EcoSystem, Features of Android, Architecture of Android, Android Version, Android SDK, Android Development tools, Anatomy of an Android Application. [Q-2]

UNIT 2:

Android User Interface: Linear Layout, Absolute Layout, Frame Layout, Relative Layout, Table Layout. [Q-2]

UNIT 3:

Designing User Interface with View: Text View, Push Button, Image Button, Edit Text, Checkbox, ToggleButton, Radio Button, ProgressBar, Spinner, List View, Gridview, Time and Date Picker. [Q-2]

UNIT 4:

Displaying Pictures and Menus with Views: Gallery Views, ImageSwitcher, GridView, Options Menu, Context Menu, DigitalClock View, Webview. SMS Messaging: Sending SMS Messages Programmatically. [Q-2]

Reference Book:

DixitPrashant Kumar, "Android", Vikas Publishing House Pvt. Ltd, 1stEdition, 2014.

LeeWei-Meng, "Beginning Android for Application Development", Wiley, Indian Edition.

Internet of Things [Elective 2] (B.VOC 5003 A)

TIME-3 hr FULL MARKS-70 CREDIT-4

The question paper shall consist of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consist of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type question carrying 3 marks.

UNIT 1:

The definition of the Internet of Things, main assumptions and perspectives. Platform for IoT devices. Device architectures. Conventional and renewable power sources for resource constrained devices. Operating systems for resource-constrained devices. [Q-1]

UNIT 2:

Node structure: Sensing, Processing, Communication, Powering. IOT networking: Topologies, Layer/Stack architecture, The data link layer for IoT- Wireless communication technologies. Wire communication technologies. [Q-2]

UNIT 3:

Introduction to ZigBee, BLE, WiFi, LTE, IEEE 802.11ah, Discuss data rate, range, power, computations/bandwidth, QoS, Service oriented protocols (COAP). Communication protocols based on the exchange of messages (MQTT). [Q-2]

UNIT 4:

Devices and gateways, Local and wide area networking, Data management, Business processes in IoT, Everything as a Service (XaaS). [Q-1]

UNIT 5:

Organization of data processing for the Internet of things. Cloud computing. Fog computing. Application case studies: Smart Grid, Home Automation, Smart City. [Q-2]

Reference books:

Madiseti Vijay and BahgaArshdeep, Internet of Things (A Hands-on-Approach), 1st Edition, VPT, 2014.

Raj Pethuru and Raman Anupama C., The Internet of Things: Enabling Technologies, Platforms, and Use Cases, CRC Press.

Vermesan Dr. Ovidiu, Friess Dr. Peter, Internet of Things: Converging Technologies for Smart Environments and Integrated Ecosystems, River Publishers.

Network Security [Elective 2] (B.VOC 5003 B)

TIME-3 hr FULL MARKS-70 CREDIT-4

The question paper shall consist of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consist of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type question carrying 3 marks.

UNIT 1:

Introduction to Cryptography: Computer Security concepts, The OSI Security Architecture, Security Attacks, Security Services, A model for Network Security, Classical Encryption Techniques. [Q-1]

UNIT 2:

Modular Arithmetic, Euclidean Algorithm, Groups, Rings, Fields, Finite Fields of the Form $GF(p)$, Polynomial Arithmetic, Finite Fields of the Form $GF(2^n)$, Prime Numbers, Fermat's and Euler's Theorem, The Chinese Remainder Theorem, Quadratic Congruence, Discrete Logarithms. [Q-2]

UNIT 3:

Difference Between Symmetric and Asymmetric Cryptography, DES, Triple DES, AES, RSA Cryptosystem, Symmetric and Asymmetric Key Cryptography Together, Elgamal Cryptosystem, Elliptic Curve Cryptosystems, Diffie-Hellman Key Exchange, Cryptographic Hash Functions, Message Authentication Codes, Digital Signature. [Q-2]

UNIT 4:

Basic Concepts, Security Socket Layer (SSL), Secure Hyper Text Transfer Protocol (SHTTP), Time stamping Protocol (TSP), Secure Electronic Transaction (SET), SSL Versus SET, 3-D Secure Protocol, Electronic Money, Email Security, Wireless Application Protocol (WAP) Security, Security in GSM. [Q-2]

UNIT 5:

Users, Trusts and Trusted Systems, Buffer Overflow and Malicious Software, Malicious Programs, Worms, Viruses, Intrusion Detection Systems (IDS), Firewalls: Definitions, Constructions and Working Principles. [Q-1]

Reference Books:

Forouzan B. A., Mukhopadhyay D., "Cryptography and Network Security", 3rd Edition, McGraw Higher Education.

Stallings W., "Cryptography and Network Security: Principles and Practice", 7th Edition, Pearson

Kahate A. "Cryptography and Network Security", 3rd Edition, McGraw Hill Education, New Delhi

Schneier B., "Applied Cryptography: Protocols, Algorithms And Source Code In C", 2nd Edition, Wiley

Software Quality Assurance (B.VOC 5004)

TIME-3 hr FULL MARKS-70 CREDIT-6

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1:

Need for Software quality – Quality challenges – Software quality assurance (SQA) – Definition and objectives – Software quality factors-McCall's quality model – SQA system and architecture – Software Project life cycle Components – Pre project quality components – Development and quality plans. [Q-1]

UNIT 2:

Software Development methodologies – Quality assurance activities in the development process- Verification & Validation – Reviews – Software Testing – Software Testing implementations – Quality of software maintenance – Pre-Maintenance of software quality components – Quality assurance tools – CASE tools for software quality – Software maintenance quality – Project Management. [Q-2]

UNIT 3:

Procedures and work instructions - Templates - Checklists – 3S developmending - Staff training and certification Corrective and preventive actions – Configuration management – Software change control – Configuration management audit -Documentation control – Storage and retrieval. [Q-2]

UNIT 4:

Project process control – Computerized tools - Software quality metrics – Objectives of quality measurement – Process metrics – Product metrics – Implementation – Limitations of software metrics – Cost of software quality – Classical quality cost model – Extended model – Application of Cost model. [Q-1]

UNIT 5:

Quality management standards – ISO 9001 and ISO 9000-3 – capability Maturity Models – CMM and CMMI assessment methodologies - Bootstrap methodology – SPICE Project – SQA project process standards – IEEE st 1012 & 1028 – Organization of Quality Assurance – Department management responsibilities – Project management responsibilities – SQA units and other actors in SQA systems. [Q-2]

Reference Books:

Daniel Galin, "Software Quality Assurance", Pearson Publication.

Alan C. Gillies, "Software Quality: Theory and Management", International Thomson Computer Press.

Mordechai Ben-Menachem "Software Quality: Producing Practical Consistent Software",
International Thompson Computer Press

Operation Research (B.VOC 5005)

TIME-3 hr FULL MARKS-70 CREDIT-6

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1:

Origin and Development of OR, nature of OR, characteristics of OR, classification of problems in OR, MODELS IN OR, phases of OR, uses and limitations of OR, methodologies in OR, APPLICATIONS IN OR. Linear programming - concept of linear programming model, mathematical formulation of the problem, graphical solution methods, linear programming methods - simplex method, big Methods, dual simplex method, two methods phase. Duality in linear programming - formulation of dual problem, application of duality [Q-2]

UNIT 2:

Mathematical models for transportation problem types. Assignment problem-zero one programming model for assignment problem. Types of assignment problems. Hungarian method, branch and bound technique for assignment problem. Game Theory-terminologies of game theory, Two person Zero-sum games, the maximin-minimax principles, games without saddle points -mixed strategies, graphical solution of $2 \times n$ and $n \times n$ games, dominance property. [Q-2]

UNIT 3:

Decision Theory: Introduction, decision under certainty, decision under risk, decision under uncertainty, decision tree. Network Scheduling by cpm/pert - Introduction, basic concept, constraints in network, critical path method (CPM), PERT network, PERT calculations. Time-cost-Trade_off Aspects in Network technique, advantages of network (PERT/CPM) [Q-2]

UNIT 4:

Queuing Theory: introduction, terminologies of queuing system, characteristics of queuing system, characteristics of queuing system, poisson process and exponential distribution, classification of queues, definition of transient and steady states, poisson queues, non-poissons queuing System, cost-profit models in queuing control. [Q-2]

References Book:

Taha, "Operations Research", 7th edition, Pearson Education, 2007.
Billey E. Gillett, "Introduction to Operations Research", Himalaya Publishing House, Delhi
HamadyA.Taha "Operations Research", Collin Mac Millan

Dot NET LAB (B.VOC P5006)

FULL MARKS-50 CREDIT-2

Experiment problems of the Dot NET lab will be from the theory classes of B.Voc 5001.

Elective 1 LAB (B.VOC P5007)

FULL MARKS-50 CREDIT-2

Experiment problems of the Elective 1 lab will be from the theory classes of B.Voc 5002.

Elective 2 LAB (B.VOC P5008)

FULL MARKS-50 CREDIT-2

Experiment problems of the Elective 2 lab will be from the theory classes of B.Voc 5003.

B.VOC PROJ-6001 Project

FULL MARKS-650 CREDIT-30.0

Industrial Project