।। सा विद्या या विमुक्तये ।।

स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ, नांदेड

"ज्ञानतीर्थ" परिसर, विष्णुपूरी, नांदेड - ४३१६०६ (महाराष्ट्र)

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY NANDED

"Dnyanteerth", Vishnupuri, Nanded - 431606 Maharashtra State (INDIA)
Established on 17th September 1994 – Recognized by the UGC U/s 2(f) and 12(B), NAAC Re-accredited with 'A' Grade

ACADEMIC (1-BOARD OF STUDIES) SECTION

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संलग्नित महाविद्यालयांतील विज्ञान व तंत्रज्ञान विद्याशाखेतील पदवी स्तरावरील द्वितीय वर्षाचे CBCS Pattern नुसारचे अभ्यासक्रम शैक्षणिक वर्ष २०२०—२१ पासून लागू करण्याबाबत.

प रि प त्र क

या परिपत्रकान्वये सर्व संबंधितांना कळविण्यात येते की, **दिनांक २० जून २०२० रोजी संपन्न झालेल्या ४७व्या मा. विद्या परिषद बैठकीतील विषय क्र.११/४७—२०२०**च्या ठरावानुसार प्रस्तुत विद्यापीठाच्या संलग्नित महाविद्यालयांतील विज्ञान व तंत्रज्ञान विद्याशाखेतील पदवी स्तरावरील **द्वितीय वर्षाचे** खालील विषयांचे **C.B.C.S. (Choice Based Credit System) Pattern** नुसारचे अभ्यासक्रम शैक्षणिक वर्ष २०२०—२१ पासून लागू करण्यात येत आहेत.

1. B.Sc.-II Year-Biophysics
2. B.Sc.-II Year-Bioinformatics
3. B.Sc.-II Year-Biotechnology
4. B.Sc.-II Year-Biotechnology (Vocational)
5. B.Sc.-II Year-Food Science
6. B.Sc.-II Year-Botany
7. B.Sc.-II Year-Horticulture
8. B.Sc.-II Year-Agro Chemical Fertilizers
9. B.Sc.-II Year-Analytical Chemistry
10. B.Sc.-II Year-Biochemistry
11. B.Sc.-II Year-Chemistry
12. B.Sc.-II Year-Dyes & Drugs Chemistry
13. B.Sc.-II Year-Industrial Chemistry
14. B.C.A. (Bachelor of Computer Application)-II Year
15. B.I.T. (Bachelor of Information Technology)-II Year
16. B.Sc.-II Year-Computer Science
17. B.Sc.-II Year-Network Technology
18. B.Sc.-II Year-Computer Application (Optional)
19. B.Sc.-II Year-Computer Science (Optional)
20. B.Sc.-II Year-Information Technology (Optional)
21. B.Sc.-II Year-Software Engineering
22. B.Sc.-II Year-Dairy Science
23. B.Sc.-II Year-Electronics
24. B.Sc.-II Year-Environmental Science
25. B.Sc.-II Year-Fishery Science
26. B.Sc.-II Year-Geology
27. B.Sc.-II Year-Mathematics
28. B.Sc.-II Year-Microbiology
29. B.Sc.-II year Agricultural Microbiology
30. B.Sc.-II Year-Physics
31. B.Sc.-II Year Statistics
32. B.Sc.-II Year-Zoology

सदरील परिपत्रक व अभ्यासक्रम प्रस्तुत विद्यापीठाच्या **www.srtmun.ac.in** या संकेतस्थळावर उपलब्ध आहेत. तरी सदरील बाब ही सर्व संबंधितांच्या निदर्शनास आणून द्यावी.

'ज्ञानतीर्थ' परिसर,
विष्णुपुरी, नांदेड — ४३१ ६०६.

जा.क्र.: शैक्षणिक—१/परिपत्रक/पदवी—सीबीसीएस अभ्यासक्रम/
२०२०—२१/३३३

दिनांक : १५.०७.२०२०.

स्वाक्षरित/—
उपकुलसचिव
शैक्षणिक (१—अभ्यासमंडळ) विभाग

प्रत माहिती व पुढील कार्यवाहीस्तव :
१) मा. कुलसचिव यांचे कार्यालय, प्रस्तुत विद्यापीठ.
२) मा. संचालक, परीक्षा व मूल्यमापन मंडळ यांचे कार्यालय, प्रस्तुत विद्यापीठ.
३) प्राचार्य, सर्व संबंधित संलग्नित महाविद्यालये, प्रस्तुत विद्यापीठ.
४) साहाय्यक कुलसचिव, पदव्युत्तर विभाग, प्रस्तुत विद्यापीठ.
५) उपकुलसचिव, पात्रता विभाग, प्रस्तुत विद्यापीठ.
६) सिस्टम एक्सपर्ट, शैक्षणिक विभाग, प्रस्तुत विद्यापीठ.

Swami Ramanand Teerth Marathwada University,Nanded
(NAAC Re-accredited with 'A' Grade)

Syllabus of

Second Year B.Sc. Information Technology
(Revised CBCS pattern)

Introduced from Academic Year 2020-2021

B.Sc. Information Technology

B.Sc. Information Technology (3years) program / degree is a specialized program in computer sciences. It builds the student on studies in Information Technology and to become competent in the current race and development of new informational sciences. The duration of the study is of six semesters, which is normally completed in three years.

CBCS pattern

The B.Sc. Information Technology program as per CBCS (Choice based credit system) pattern, in which choices are given to the students under open electives and subject electives. The students can choose open electives from the wide range of options to them.

Eligibility and Fees

The eligibility of a candidate to take admission to **B.Sc. Information Technology** program is as per the eligibility criteria fixed by the University. More details on admission procedure and fee structure can be seen from the prospectus of the college / institution as well as on website of the University.

Credit Pattern

Every course has corresponding grades marked in the syllabus structure. There are 24 credits per semester. A total of 144 credits are essential to complete this program successfully. The Grading pattern to evaluate the performance of a student is as per the University rules.

Every semester has a combination of Theory (core or elective) courses and Lab courses. Each theory course has 04 credits which are split as 03 external credits and 01 internal credit. The university shall conduct the end semester examination for 03 external credits. For theory internal credit, student has to appear for 01 class test (15 marks) and 01 assignment (10 marks). Every lab course has 02 credits which are split as 01 external credit and 01 internal credit. For lab internal credit, the student has to submit Laboratory Book (05 marks) and remaining 20 marks are for the Lab activities carried out by the student throughout the semester. For lab external credit, 20 marks are reserved for the examinational experiment and 05 marks are for the oral / viva examinations.

The open elective has 04 credits which are purely internal. If students are opting for MOOCs as open elective , then, there must be a Faculty designed as MOOCs course coordinator who shall supervise learning through MOOCS. This is intentionally needed as the MOOCs course coordinator shall verify the MOOC details including its duration, staring date, ending date, syllabus contents, mode of conduction, infrastructure feasibility, and financial feasibility during start of each semester. This is precautionary as the offering of the MOOCs through online platforms are time specific and there must be proper synchronization of semester duration with the MOOCs duration. Students must opt for either institutional / college level open elective or a course from University recognized MOOCs platforms as open electives.

The number of hours needed for completion of theory and practical courses as well as the passing rules, grading patterns, question paper pattern, number of students in practical batches, etc shall be as per the recommendations, norms, guidelines and policies of the UGC, State Government and the SRTM University currently operational. The course structure is supplemented with split up in units and minimum numbers of hours needed for completion of the course, wherever possible.

Under the CBCS pattern, students would graduate **B.Sc. Information Technology** with a minimum number of required credits which includes compulsory credits from core courses, open electives and program specific elective course. All students have to undergo lab / practical activities leading to specific credits and project development activity as a part of professional UG program.

1. **B.Sc. Information Technology** Degree / program would be of 144 Credits. Total credits per semester= 24
2. Each semester shall consist of three core courses, one elective course, one open elective course and two practical courses. Four theory courses (core+elective) = 16 Credits
3. Two practical / Lab courses= 4 Credits in total (02 credits each) , One Open elective= 4 credit
4. One Credit = 25 marks , Two Credits = 50 Marks, Four Credits = 100 Marks

PEO, PO and CO Mappings

1. **Program Name** : B.Sc.(Information Technology)

2. **Program Educational Objectives**: After completion of this program, the graduates / students would

PEO I :Technical Expertise	Implement fundamental domain knowledge of core courses for developing effective computing solutions by incorporating creativity and logical reasoning.
PEO II : Successful Career	Deliver professional services with updated technologies in Information Technology based career.
PEO III :Hands on Technology and Professional experience	Develop leadership skills and incorporate ethics, team work with effective communication & time management in the profession.
PEO IV :Interdisciplinary and Life Long Learning	Undergo higher studies, certifications and research programs as per market needs.

3. **Program Outcome(s):** Students / graduates will be able to

PO1: Apply knowledge of mathematics, science and algorithm in solving Computer problems.
PO2: Generate solutions by conducting experiments and applying techniques to analyze and interpret data
PO3: Design component, or processes to meet the needs within realistic constraints.
PO4: Identify, formulate, and solve problems using computational temperaments.
PO5: Comprehend professional and ethical responsibility in computing profession.
PO6: Express effective communication skills.
PO7: Recognize the need for interdisciplinary, and an ability to engage in life-long learning.
PO8: Actual hands on technology to understand it's working.
PO9: Knowledge of contemporary issues and emerging developments in computing profession.
PO10: Utilize the techniques, skills and modern tools, for actual development process
PO11: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings in actual development work
PO12: Research insights and conduct research in computing environment.

4. **Course Outcome(s):** Every individual course under this program has course objectives and course outcomes (CO). The course objectives rationally match with program educational objectives. The mapping of PEO, PO and CO is as illustrated below

5. **Mapping of PEO& PO and CO**

Program Educational Objectives	Thrust Area	**Program Outcome**	Course Outcome
PEO I	Technical Expertise	PO1,PO2,PO3,PO6	All core courses
PEO II	Successful Career	PO4,PO5,PO11,	All discipline specific electives courses
PEO III	Hands on Technology and Professional experience	PO8,PO10	All Lab courses
PEO IV	Interdisciplinary and Life Long Learning	PO7,PO9,PO12	All open electives and discipline specific electives

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED
CHOICE BASED CREDIT SYSTEM (CBCS)
SEMESTER PATTERN
Faculty of Science & Technology
Under Graduate (UG) Programmes
Program: B.Sc. Information Technology 2nd Year w.e.f AY 2020-2021

Year	Semester	Course category	Course Code	Course Title	Credits * *(split up will be given separately)
Second	Third	Core Course	BIT-301	Logical Reasoning	04
		Core Course	BIT-302	Object oriented Programming using C++	04
		Core Course	BIT-303	System Analysis and Design	04
		Chose any one from the below Elective courses			
		Elective Subject	BIT-304 A	Multimedia and Animation	04
			BIT-304 B	Computer Graphics	
		Chose any one Open Elective courses			
		Open Elective	BIT-305 A	University recognized MOOC (NPTEL / SWAYAM / others) OR Intra / Inter Departmental courses OR	04
			BIT-305 B	Communication Skills –1	
		Lab / Practical	BIT-306	C++ Programming	02
			BIT-307	Based on Elective	02
Total					**24**
Second	Fourth	Core Course	BIT-401	Numerical Aptitude	04
		Core Course	BIT-402	Programming in Java	04
		Core Course	BIT-403	Management Information System	04
		Chose any one from the below Elective courses			
		Elective Subject	BIT-404A	Computer Architecture and Microprocessor	04
			BIT-404B	E-Commerce Technology	
		Chose any one Open Elective courses			
		Open Elective	BIT-405A	University recognized MOOC (NPTEL / SWAYAM / others) OR Intra / Inter Departmental courses OR	04
			BIT-405B	Communication Skills – 2	
		Lab / Practical	BIT-406	Java Programming	02
			BIT-406	Based on Elective	02
Total					**24**
For skill enhancement, if any, in all semesters, online course with internal credits is mandatory					

Course Objective:

- Understand and explain the importance of critical thinking
- Identify the core skills associated with critical thinking
- Construct a logically sound and well reasoned argument
- Demonstrate the difference between deductive and inductive reasoning

Course Outcome:-

- Identify logical relations among statements.
- Analyse logically complex statements into their truth functional or quantificational components
- This enable students to develop their ability to reason by introducing them to elements of formal reasoning

UNIT I 1 Series, Analogy and Classification   (Lecture 7)

A Series: Types of series, Alphabet series, Alpha numeric series, Examples on continues pattern series.

Analogy: Completing the Analogous Pair, Direct/Simple Analogy, Choosing the Analogous Pair, Double Analogy, Number analogy, Alphabet analogy, Correlation between letters/numbers.

Classification: Choosing the odd word, Choosing the odd numeral, Choosing the odd letter group

UNIT II 2 Coding-Decoding   (Lecture 7)

A Coding-Decoding: Letter coding, Direct Letter Coding, Number/Symbol Coding.

B Substitution: Concept of substitution, Problem solving by using substitution.

C Deciphering: Deciphering messages word codes, Deciphering numbers/symbol codes for messages

UNIT III 3 Blood Relation   (Lecture 7)

A Introduction to relations

B Concepts of deciphering relations based problems

C Problems on deciphering jumbled up descriptions

D Relation puzzle

E Coded relations.

UNIT IV 4 Seating or Placing Arrangement

A Problems based on linear and circular based arrangement

UNIT V :- Direction Sense Test **(Lecture 7)**

A Introduction

B Problems based on angular changes in direction

C Problems on Shadows

D General Problems based on Pythagoras Theorem

UNIT VI Syllogism and Data Sufficiency **(Lecture 7)**

A Syllogism: Introduction of logic, Rules of syllogism, Two statement problem, Three statement problem B Data Sufficiency: Problems of Data sufficiency based on all Chapters.

Reference Books:-

1. A Modern Approach to Verbal & NonVerbal Reasoning Dr.R.SAggarwal S. Chand and Company Publications
2. A Modern Approach to Verbal & Non-Verbal Reasoning Dr.R.SAggarwal S. Chand and Company Publications

3.Test of Reasoning Edgar Thorpe McGraw Hill Education

4.www.practiceaptitudetests.com

5. www.allindiaexams.in

BIT-302: Object Oriented Programming using C++

Course objective :-

- To understand how C++ improves C with object-oriented features.

- To learn the syntax and semantics of the C++ programming language.

- Apply the concepts of object-oriented programming

- To learn how to define classes using inheritance to promote code reuse in C++.

- Illustrate the process of data file manipulations using C++

- Learn syntax, features of Standard Template Library and how to utilize it.

Course outcome :-

- Ability to explain the difference between object oriented programming and procedural programming concepts.

- Ability to program using object oriented features such as inheritance and polymorphism, , operator overloading, dynamic memory allocation, file I/O, exception handling, etc

- Ability to apply object oriented techniques to solve computing problems.

Unit – 1   **(Lecture – 6)**

Introduction to basic concepts of OOPs Object Oriented Programming Paradigm, Basic concepts of OOP's, Benefits and Applications of OOP, Structure of C++ program. A simple C++ Program.

Unit – 2   **(Lecture – 8)**

Tokens, Expressions and Control Structures Tokens, Keywords , Identifiers, and Constants , Data-types , Reference variable, Operators in C++, , Manipulators , Type Cast operator, Operator precedence , Control Structures. Function, function prototyping, call by reference, return by reference, Inline function, Default Argument, function overloading

Unit – 3   **(Lecture – 6)**

Class and object Specifying a class and object, Defining Member Functions, Nesting of member function, Memory allocation for objects, Static data member, static Member function, Friend function, Returning objects

Unit – 4   **(Lecture – 6)**

Constructors and Destructors Constructors, parameterized constructors, Constructors with default arguments, Dynamic initialization of objects, Copy Constructor, Destructors

Unit – 5   **(Lecture – 8**

Inheritance, Operator Overloading and polymorphism Defining Derived classes, Types of inheritance, Virtual base class, Abstract class, Defining Operator overloading , Overloading Unary and binary operators , Pointer to object, This pointer , Pointer to Derived classes , Virtual function , Pure virtual function

Unit – 6   **(Lecture – 8)**

Console and File I/O operations C++ stream classes , formatted and unformatted console I/O operations, C++ classes for file stream operations, for file I/O, Opening and closing file, sequential and random access, Error handling during a file operation, command line arguments, class Templates, function templates, introduction to STL.

Reference Books:-

 1) The C++ Complete Reference -TMH Publication

2) Object-Oriented Programming with C++ -E-Balgurusamy

3) Let us C++ -Yashwant kanetkar

BIT303- System Analysis and Design

Course Objectives

System analysis helps in discovering means to design systems where sub-system may have apparently conflicting objectives. It helps in achieving inter compatibility and unity of purpose of sub-systems. It offers a means to create understanding of the complex structures.

Course Outcome

After successfully completing this course, students will understand concepts of Analysis and Designing Information Systems. Students will understand writing system proposals, system development scheduling, and cost-benefits analysis etc. also dealing with quality assurance.

Course Contents

Unit 1

System Definition, Characteristics, Elements and Types of system, Need of System Analysis and design, Role and Qualities of System Analyst, System Development Life Cycle

Unit 2

Project Initiation, Feasibility study, Ascertaining HW/SW needs, Criteria for HW/SW selection, Make v/s Buy Decision, Cost Benefit Analysis

Unit 3

Structured Analysis tools- DFD, Data Dictionary, Decision Tree, Decision Table, Structured English, Activity planning control, Activity Diagrams, Case modeling, UML, Class Diagram

Unit 4

System Proposal, Project Scheduling, Information Gathering Tools- Interviews, Questionnaire, JAD, Prototyping

Unit 5

System Design, Input/output Design, From Design, Database Design, File organization

Unit 6

System Implementation Plan, Activity Network for Conversion, Combating Resistance to Change, System Testing, Test Plan AND test data, Types of System Test, Quality Assurance, Documentation

Text Books

1. System Analysis and Design- Kendall and Kendall, Pearson Education, Inc., Prentice Hall.

Reference Books
1. System Analysis and Design- E. M. Awad, Galgotia Publications Pvt. Ltd
2. Modern System Analysis and Design - Jeffrey A. Hoffer, Prentice-Hall, Inc.

BIT 304 A: Multimedia and Animation

BIT-304 B: Computer Graphics
Course Objectives
This subject helps students develop problem-solving, communication and research skills in the context of computer graphics, including computer representation, and manipulation and display of pictorial information. Multimedia and web design technology play an important role in the field of education, agriculture, product launch, science and technology, corporate development and enhanced business opportunities.
Course Outcomes
Students will be able to have a basic understanding of the core concepts of computer graphics. Be capable to create interactive computer graphics. They will also understand a typical graphics pipeline.
Course Contents
Unit-1
Introduction to raster scan displays, Pixels, frame buffer, Vector and Character generation, random scan systems, Graphics Primitives, Display devices, Display file structure, Scan Conversion techniques, line drawing: simple DDA, Bresenham"s Algorithm, Circle Drawing Algorithms. Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms
Unit-2
2D transformation: Translation, Rotation, Scaling, Shearing, Reflection. Inverse Transformation, Homogenous coordinate system, Matrices Transformation, Composite Transformation. Windowing and Clipping: World Coordinate System, Screen Coordinate System, Viewing Transformation, Line Clipping, Cohen Sutherland, Midpoint Line clipping algorithms, Polygon Clipping: Sutherland –Hodgeman, Weiler-Atherton algorithms.
Unit-3
3D transformations: translation, rotation, scaling. Parallel and Perspective Projection, Types of Parallel and Perspective Projection. Hidden Surface elimination: Depth comparison, Back face detection algorithm, Painters algorithm, Z-buffer algorithm. Curve generation, Bezier and B-spline methods.
Unit-4
Basic Illumination Model, Diffuse reflection, Specular reflection, Phong Shading Gourand shading, ray tracing, color models like RGB, YIQ, CMY, HSV.
Unit –5
Multimedia System: An Introduction, Multimedia hardware, Multimedia System Architecture. Data and File Format standards. i.e RTF, TIFF, MIDI, JPEG, DIB, MPEG
Unit 6
Audio: digital audio, MIDI, processing sound, sampling, compression. Video: Avi, 3GP,MOV, MPEG, compression standards, compression through spatial and temporal redundancy. Multimedia Authoring
Text Books
1. Computer Graphics- Donald Hearn and M.P. Becker, Pearson Pub.
2. Procedural Elements of Computer Graphics- Rogers, Tata McGraw Hill.

University recognized MOOC (NPTEL / SWAYAM / others) OR Intra / Inter Departmental courses

OR

Name of Subject	Open Elective : Communication Skills-1
Subject Code	BIT-305 B

Objectives of the Course:
1. To make a comprehensive use of English in day-to-day life.
2. To help Students develop the ability to learn and contribute critically.
3. To develop the writing skills of the students.
4. To help the students to understand the basic usages of English.

Course outcome:
By the end of this course students should be able to:
1. Understand and demonstrate Basic English usages for their different purposes.
2. Clear entrance examination and aptitude tests.
3. Write various letters, reports required for professional life.

Unit One: Basic English Grammar,
1. Word classes: Open Word Classes & Close Word Classes
2. Word Formation Process; Word analysis
3. Phrases: NP, VP, AdjP, AdvP, PrepP
4. Clauses: Clause Elements, Basic Structure
5. Sentences: Complex & Compound

Unit Two: Grammar- it's Usage
1. Tenses: Present, Past, Future
2. Voice: Active & Passive
3. Speech: Direct & Indirect
4. Common Errors in English
5. Transformation of Sentences

Unit Two: Communication Skill & Soft Skills
1. Communication Skills: Definition & Concept
2. Process /cycle of Communication,
3. Types/Methods of Communication,
4. Barriers of Communication
5. Soft Skills: Concept, Negotiation skills, Empathy, Manners & Etiquettes.

Unit Three: Language Skills
1. Language: Definition & its Characteristics.
2. Listening Skill: Process and types.
3. Speaking Skill: Process, style.
4. Reading skill : Process , Reading comprehension passage.
5. Writing Skill : Process & importance

Unit Four: Presentation skills
1. Seminars
2. Conference
3. Anchoring & Vote of Thanks
4. Narrating Incidents

    5. Story Telling

References:-
1. Practical English Grammar by – A.J. Thomson
2. Mac Millan Foundation English by - R. K. Dwivedi, A. Kumar.
3. Soft Skills by - K Alex.
4. Group Discussion for Admissions & Jobs by - AnandGanguly
5. Effective Telephone Skills by - Thomas J. Farrell
6. Written & Spoken English by - V. H. Savant & S. R. Madan
7. Modern English Grammar: An Introduction by - L.S. Deshpande, P.H. Dharamsi.

Lab : BIT 306

1. Program to demonstrate Basic structure of C++ Programming
2. Program to demonstrate Data Types in C++
3. Program to demonstrate Operators in C++
4. Program to demonstrate I/O Statement in C++
5. Program to demonstrate Decision Making statement in C++
6. Program to demonstrate Looping Statement in C++
7. Program to demonstrate Break, Continue, goto statement in C++
8. Program to demonstrate Array in C++
9. Handling Inheritance, polymorphism in C++
10. Advanced concepts in C++

Lab : BIT 307 : Minimum 10 practicals to be set on all theory aspects of the elective subject
.

BIT-401	Fourth Semester	**Numerical Aptitude**	Credits:04

Course Objectives:
- Practicing Basics of mathematics
- Use of Numbers
- Finding Percentage and Profit or Loss, Average
- Finding Time, Speed, Distance,
- Use of permutation and combination and Probability

Course Outcomes:
- Develops problem solving skills of student
- Improves Basic and advanced calculations used in day to day life.
- Improves Mental Alertness
- Analytical Thinking

Unit I	**Introduction of Number system**

A. Numbers: Types of numbers, Divisibility tests of numbers, arithmetic progression, Geometric progression, Relationship between Arithmetic progression and Geometric progression.
B. HCF and LCM : Methods of calculating highest common factor and greatest common divisor, factorization method, Division method, Finding HCF and LCM more than two numbers, LCM factorization method, Division method, Finding HCF and LCM more than two numbers, LCM and HCF of fractions and decimal numbers, Applications of LCM and HCF.

Unit II	

A. Average: Definition of average, Formulae and theoretical problem on average.
B. Problem on ages: simultaneous equations and their applications, Theoretical problems on ages, Theoretical problems on numbers.

Unit III	

A. Percentage: Concept of percentage, Application of percentage, Results on populations, Result on depreciations, Theoretical problem on percentage.
B. Profit and Loss: Definition of cost price, selling price and profit, Formulae of profit and loss, Theoretical problems on profit and loss.

Unit IV	

A .Time and Distance: Concept of time and distance, Formulae of time and distance, Theoretical problems on time and distance.
B. Problems on Train: Formulae of problems on train, Theoretical problems on train
C. Boat and streams: Concept of boat and streams, Formulae of boat and streams, Theoretical problems on boat and streams.

Unit V	

A. Time and Work: Concept of time and work, Relationship between time and work, Theoretical problems on time and work.
B. Allegations and Mixtures: Definition of allegation and mixtures, Rules of allegation's, Theoretical problems on mixture and allegation.

Unit VI	

A . Simple and Compound Interest: Definition of simple and Compound interest, Formulae of simple and compound interest, Relationship between simple and compound interest, Theoretical problems on

simple and compound interest.

B. Permutations and combinations: Definition of permutations and combinations, Formulae of permutation and combinations, Relationship between permutation and combinations, Problems on permutations and combinations.

C. Probability: Definition of probability, Examples of performing a random experiment, Probability of occurrence of an event, Results on probability, Theoretical problems on probability.

Reference Books:

Sr. no.	Name of the book	Author	Publication
1.	Quantitative Aptitude	Dr.R.S Aggarwal	S.Chand and Company
2.	Quantitative Aptitude	AbijitGuha	Tata McGraw Hill Education
3.	www.indiabix.com		
4.	www.allindiaexams.in		

BIT – 402 Programming in Java

BIT- 403 MIS

BIT – 404 A Comp Architecture and Microprocessor

BIT-404 B E –Commerce Technology

BIT – 405 A Open Elective

BIT – 405 B Communication Skills-2

BIT – 406   Lab - JavaProgramming

BIT – 407 Lab- Based on Electives