Bachelor of Computer Applications

FIRST SEMESTER EXAMINATION

Code No.	Paper	L	T/P	Credits	Marks Internal	Marks External
THEROY PAPERS						
BCA 101	Mathematics – I	3	1	4	25	75
BCA 103	Technical Communication	3	0	3	25	75
BCA 105	Introduction to Programming Language using C	3	1	4	25	75
BCA 107	Introduction to Computers & IT	3	1	4	25	75
BCA 109	Physics	3	1	4	25	75
PRACTICALS						
BCA 151	Practical – I C Prog. Lab	0	6	3	40	60
BCA 153	Practical – II IT Lab	0	6	3	40	60
BCA 155*	Communication Skills	2	0	2	100	------
	Total	**17**	**16**	**27**	**305**	**495**

***NUES**

TOTAL MARKS : 800

Note : A Minimum of 40 Lectures is mandatory for each course.

Paper Code: BCA 101
Paper ID: 20101 **L T C**

Paper: Mathematics – I **3 1 4**

Aim: To understand the basic concepts of mathematics.
Objectives

- To get the knowledge about the matrices, determinants and limits.
- To study the basics of differential and integral calculus

INSTRUCTIONS TO PAPER SETTERS:	**Maximum Marks : 75**
1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.	
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 12.5 marks	

UNIT - I
DETERMINANTS: Definition, Minors, Cofactors, Properties of Determinants, MATRICES: Definition, Types of Matrices, Addition, Subtraction, Scalar Multiplication and Multiplication of Matrices, Adjoint, Inverse, Cramers Rule, Rank of Matrix Dependence of Vectors, Eigen - Vectors of a Matrix, Caley-Hamilton Theorem (without proof) **[No. of Hrs: 12]**

UNIT – II
LIMITS & CONTINUITY: Limit at a Point, Properties of Limit, Computation of Limits of Various Types of Functions, Continuity at a Point, Continuity Over an Interval, Intermediate Value Theorem, Type of Discontinuities. **[No. of Hrs: 10]**

UNIT-III
DIFFERENTIATION: Derivative, Derivatives of Sum, Differences, Product & quotients, Chain Rule, Derivatives of Composite Functions, Logarithmic Differentiation, Rolle's Theorem, Mean Value Theorem, Expansion of Functions (Maclaurin's & Taylor's), Indeterminate Forms, L' Hospitals Rule, Maxima & Minima, Asymptote, Successive Differentiation & Liebnitz Theorem. **[No. of Hrs: 12]**

UNIT – IV
INTEGRATION: Integral as Limit of Sum, Riemann Sum, Fundamental Theorem of Calculus, Indefinite Integrals, Methods of Integration Substitution, By Parts, Partial Fractions, Integration of Algebraic and transcedental Functions, Reduction Formulae for Trigonometric Functions, Gamma and Beta Functions. **[No. of Hrs: 10]**

TEXT BOOKS:
[T1] Kresyig E., "Advanced Engineering Mathematics", 5th Edition, John Wiley & Sons,1999.
[T2] Babu Ram, "Engineering Mathematics", Pearson Education.
[T3] Apostol Tom M, Calculus, Vol I and II John Wiley (2003).
REFERENCE BOOKS:
[R1] B.S. Grewal, "Elementary Engineering Mathematics", 34th Ed., 1998.
[R2] H.K. Dass, "Advanced Engineering Mathematics", S. Chand & Company, 9th Revised Edition, 2001.
[R3] Shanti Narayan, "Differential Calculas", S.Chand & Company, 1998

Paper Code: BCA 103 **L T C**

Paper Id: 20103 **3 0 3**

Paper: Technical Communication

Pre-requisites: None

Aim : To Understand the correct use of English Language and improve the Communication Skills of the students.

Objectives

- To have basic understanding of the correct use of English Language.
- To improve oral as well as written communication skills.

INSTRUCTIONS TO PAPER SETTERS: Maximum Marks: 75

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 12.5 marks.

UNIT-I

Concepts and Fundamentals: Introduction to Technical Communication, meaning of communication, Importance of communication, Communication scope, types, Process of communication, Communication models and theories, Essentials of good communication - The seven Cs of communication, Factors responsible for growing importance of communication, Channels of communication, Verbal and Non-Verbal communication, Formal and Informal communication, Barriers of, and aids to communication.[T1, T2, T3, T4]

[No. of Hrs: 11]

UNIT-II

Written Communication: Objectives of written communication, Media of written communication, Merits and demerits of written communication, Planning and preparing of effective business messages. Persuasive writing.

Overview of Technical Research and Report Writing : Definition and Nature of Technical Writing, Properties/features and process of Technical Writing, Basic Principles of Technical Writing, Styles in Technical Writing, The Role of Technical Writing, The Wholistic Guide of Technical Writing , End-products of Technical Writing. Writing Proposals.

Writing Letters: Business letters, Office memorandum, Good news and bad news letters, Persuasive letters, Sales letters, Letter styles/ layout.

Report Writing**:** Meaning & Definition, Types of report (Business report & Academic report), Format of report, Drafting the report, Layout of the report, Essential requirement of good report writing.

Job Application**:** Types of application, Form & Content of an application, drafting the application, Preparation of resume. [T1,T2,T3,]

[No. of Hrs: 11]

UNIT-III

Oral Communication: Principles of effective oral communication, Media of oral communication, Advantages of oral communication, Disadvantages of oral communication, Styles of oral communication.

Interviews**:** Meaning & Purpose, Art of interviewing, Types of interview, Interview styles, Essential Features, Structure, Guidelines for Interviewer, Guidelines for interviewee.
Meetings**:** Definition, Kind of meetings, Advantages and disadvantages of meetings/ committees, Planning and organization of meetings.
Project Presentations: Advantages & Disadvantages, Executive Summary, Charts, Distribution of time (presentation, questions & answers, summing up), Visual presentation, Guidelines for using visual aids, Electronic media (power-point presentation).
Listening Skills: Good listening for improved communications, Art of listening, Meaning, nature, process, types and importance of listening, Principles of good listening, Barriers in listening
Negotiation Skills **:** Definition of negotiation, Factors that can influence negotiation, what skills do we need to negotiate, Negotiation process (preparation, proposals, discussions, bargaining, agreement, implementation).
Strategies to, improve oral, presentation, speaking and listening skills. [T1,T2, T3,T4]

[No. of Hrs: 11]

UNIT-IV

Soft Skills: Non Verbal communication- kinesics & Proxemics, parlanguage, interpersonal skills, Corporate communication skills - Business Etiquettes [T1,T2,T4]
Language Skills: Improving command in English, improving vocabulary, choice of words, Common problems with verbs, adjectives, adverbs, pronouns, tenses, conjunctions, punctuations, prefix, suffix, idiomatic use of prepositions. Sentences and paragraph construction, improve spellings, introduction to Business English. [T3, R1, R3]

[No. of Hrs: 11]

TEXTBOOKS:

[T1] Kavita Tyagi and Padma Misra , "Advanced Technical Communication", PHI, 2011
[T2] P.D.Chaturvedi and Mukesh Chaturvedi, "Business Communication – Concepts, Cases and Applications", Pearson, second edition.
[T3] Rayudu, "C.S- Communication", Himalaya Publishing House, 1994.
[T4] Asha Kaul , "Business Communication", PHI, second edition.

REFERENCES:

[R1] Raymond Murphy, "Essential English Grammar- A self study reference and practice book for elementary students of English" , Cambridge University Press, second edition.
[R2] Manalo, E. & Fermin, V. (2007). Technical and Report Writing. ECC Graphics. Quezon City.
[R3] Kavita Tyagi and Padma Misra , "Basic Technical Communication", PHI, 2011.
[R4] Herta A Murphy, Herbert W Hildebrandt and Jane P Thomas, "Effective Business Communication", McGraw Hill, seventh edition.

Paper Code: BCA 105 **L T C**

Paper Id: 20105 **3 1 4**

Paper: Introduction to Programming Language using C

Pre-requisites: None

Aim : To Understand the Programming Fundamentals and the basics of the 'C' Programming Language.

Objectives:

- To be able to build own logic for a given problem and finally develop one's own programs
- To understand the syntax and the semantics of C programming language.

INSTRUCTIONS TO PAPER SETTERS: Maximum Marks: 75

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 12.5 marks.

UNIT I

C basics: C character set, Identifiers and keywords, Data types, constants, variables and arrays, declarations, expressions statements, symbolic constants, compound statements, arithmetic operators, unary operators, relational and logical operators, assignment operators, conditional operators, bit operators.

C constructs: If statement, if….else statement, if…..else if….else statement, while statement, do….while statement, for statement, switch statement, nested control statement, break operator, continue operator, comma operator, goto statement. .[T1,T2,T3]

[No. of Hrs: 11]

UNIT – II

C Functions: Functions: declaration, definition & scope, recursion, call by value, call by reference.

Storage Classes: automatic, external (global), static & registers.

Arrays: Arrays, pointers, array & pointer relationship, pointer arithmetic, dynamic memory allocation, pointer to arrays, array of pointers, pointers to functions, array of pointers to functions, Preprocessor directives: #include, #define, macro's with arguments, the operators # and ##, conditional compilations. [T1,T2,T3] **[No. of Hrs: 11]**

UNIT – III

Structures: Structures, unions, passing structure to functions, bit fields, file handling [text (ASCII), binary] [T1,T2,T3] **[No. of Hrs: 11]**

UNIT – IV

String manipulation functions and other standard library functions from stdio.h, stdlib.h, conio.h, ctype.h, math.h, string.h, process.h.

Usage of command line arguments. [T1, T2, T3] **[No. of Hrs: 11]**

TEXTBOOKS:

[T1]Ashok N. Kamthane, "Computer Basics and C Programming", Pearson Education.
[T2]E. BalaGuruswamy, "Programming in ANSI C", 2008.
[T3]V Rajaraman, "Computer Basics and C Programming", PHI.

REFERENCES:

[R1]Herbert Schildt, "C The Complete Reference" Fourth Edition, 2000.
[R2]Yashwant Kanetkar, "Let us C" eighth edition, 2002.
[R3]Kernighan and d. Ritchie, "The ANSI C Programming Language", 2000.
[R4]Stephenn Prata**, "**C Primer Plus" Fourth Edition, 2001.
[R5]Schaum's Outline Series, "Programming with C", 2nd Edition, 1996.

Paper Code:BCA 107 **L T C**
Paper ID: 20107 **3 1 4**
Paper: Introduction to Computers and IT
Pre-requisites:None
Aim: To provide the students Basic knowledge of computers and information technology.
Objectives
This is an elementary course in computers and information technology. Upon completion of this course the student should be able to:

- Discuss the evolution of computers in different generations.
- Classify computers in different categories based on their capabilities.
- Describe the major components of computers and information technology applications: Hardware, software, data, processes, computer networks and people.
- Demonstrate an understanding of the importance of algorithms in the development of IT applications.

INSTRUCTIONS TO PAPER SETTERS: Maximum Marks: 75
1. The paper setters are required to restrict upto the overview of the concepts.
2. Question No.1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
3. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 12.5 marks.

UNIT – I
Introduction to Computers:
The evolution of computers: Computer Generation from First Generation to Fifth Generation. Classifications of Computers: Micro, Mini, Mainframe and super computers, Distributed Computer System, Parallel Computers.
Computer Hardware: Major Components of a digital computer, Block Diagram of a computer Input-output devices, Description of Computer Input Units, Output Units. CPU.
Computer Memory: Memory Cell, Memory Organization, Read Only Memory, Serial Access Memory, Physical Devices Used to construct Memories, Magnetic Hard disk, floppy Disk Drives, Compact Disk Read Only Memory, Magnetic Tape Drives. [T1][R1] **[No. of Hrs: 12]**

UNIT – II
Interaction With Computers:
Computer Software: System software, assemblers, compilers, interpreters, linkers Elementary Operating System concepts, different types of operating systems, Application Software: Introduction to MS Office (MS-Word, MS Powerpoint, MS-Excel) Computer Programming and Languages: Algorithms, flow chart, decision tables, pseudo code, Low level languages and introduction to high level languages. [T1][T2][R3] **[No. of Hrs: 12]**

UNIT – III
Computer Number System: Decimal, Binary, Octal, Hexa-decimal.**Conversion:** Decimal to all other number systems, Binary to octal and hexa decimal, Addition of binary numbers, Binary subtraction, Use of complements to represent negative numbers, Conversion of a binary fraction to a decimal fraction and decimal to binary fraction, Binary Coded Decimal(BCD), ASCII Codes, EBCDIC codes, Gray codes, Unicodes.[T1][R1]
[No. of Hrs: 10]

UNIT – IV

Computer Network & Internet

Basic elements of a communication system, Data transmission modes, Data Transmission speed, Data transmission media, Digital and Analog Transmission, Network topologies, Network Types (LAN, WAN and MAN), Client and Servers , Intranet, Extranet.

Internet: Terminologies related to Internet: Protocol, Domain name, IP address, URL, World Wide Web.

Overview of various services on Internet: E-mail, FTP, Telnet, Chat , Instant Messaging.

[T1][T2][R1][R2] **[No. of Hrs: 10]**

TEXT BOOKS

[T1] P. K. Sinha & Priti Sinha , "Computer Fundamentals", BPB Publications, 1992.

[T2] Anita Goel "Computer Fundamentals", Pearson.

REFERENCE BOOKS

[R1] B.Ram Computer fundamentals Architecture and Organization,New Age Intl.

[R2] Alex Leon & Mathews Leon, "Introduction to Computers", Vikas Publishing .

[R3] Norton Peter, "Introduction to computers", 4th Ed., TMH, 2001.

[R4] Vikas Gupta, "Comdex Computer Kit", Wiley Dreamtech, Delhi, 2004.

Paper Code : BCA 109 **L T C**
Paper ID: 20109 **3 1 4**
Paper : Physics
Aim: To know the fundamentals of Physics
Objectives

- To get the knowledge about the basic laws of nature such as motion, work, power and energy
- To study the electrostatics, semiconductors and devices.

INSTRUCTIONS TO PAPER SETTERS: MAXIMUM MARKS: 75

1. Question No. 1 should be compulsory and over the entire syllabus. It should be of 25 marks and it may contain objective or short type question.
2. Rest of the paper shall contain two questions from each unit. However students will attempt only one question from each unit. Each question should be 12.5 marks.

UNIT – I

Law of Motion: Force and Inertia, Law of inertia or Newton's first law of motion, Newton's Second law of motion, Newton's third law of motion and it's applications, Basic forces in nature, Weight of body in lift, Equilibrium of concurrent forces, Lemi's Theorem
Friction: Cause of friction, Types of friction, Laws of friction, Angle of friction and repose, Centripetal and centrifugal force, velocity of vehicle on curved leveled and banked road.
[T1] [T2] **[No. of Hrs: 11]**

UNIT – II

Work, Energy & Power: Work, Conservative force, Power, Kinetic Energy, Work energy theorem, Potential Energy, Conservation of gravitational P.E. into K.E., P.E. of spring.
Collisions: Types of collision, elastic collision in 1D & 2D, Inelastic collision in 1D, Perfectly inelastic collision in 1D. **[T1] [T2]** **[No. of Hrs: 11]**

UNIT – III

Electricity & electromagnetism: Electric charge, Electron theory of electrification, Frictional electricity, Properties of electric charge, Coulomb's Law, Superposition Principle, Electric field intensity, Electric Lines of forces.
Electrostatics: Line integral of electric field, Electrostatic potential, State & Proof of Gauss's theorem.
Capacitance: Principal of Capacitor, Parallel and spherical capacitors, Grouping of capacitors and their capacitance, Effect of dielectric in capacitors.
Current Electricity: Current, Ohm's Law, Resistance, Grouping of resistance, Krichoff's rule, Wheatstone bridge, Slide Wire Bridge. **[T3] [T4]** **[No. of Hrs: 11]**

UNIT – IV:

Structure of Atom: Thomson's atomic model, Rutherford's alpha scattering experiment and atomic model, Postulates of Bohr's Model.
Semiconductors: Energy bands in solids, Difference between metals, insulators and semi conductors, Current carriers in semiconductors, Intrinsic semiconductor, Doping, Extrinsic semiconductors, Formation of p-n junction, Biasing of p-n junction, Light emitting diode.
Transistors: Action of n-p-n & p-n-p transistors, Advantages of transistors, Integrated Circuit.**[T3] [T4]** **[No. of Hrs: 11]**

TEXTBOOKS:

[T1]: S.K. Gupta, "Modern ABC of Physics", Vol1, Modern Publishers.

[T2]: Pradeep, "Fundamental Physics", Class XI, Pradeep Publications.
[T3]: S.K. Gupta, "Modern ABC of Physics", Vol2, Modern Publishers.
[T4]: Pradeep, "Fundamental Physics", Class XII, Pradeep Publications.