BCA – FIRST SEMESTER

Paper No.	Title of the Subject	Hrs/Wk	Examination Duration	Marks		IA	Total Marks	
				Max	Min		Max	Min
BCA101 (A)	Mathematics – 1	4	3 Hrs	80	32	20	100	40
BCA101(B)	Accounting & Financial Management	4	3 Hrs	80	32	20	100	40
BCA102(A)	Functional Kannada	4	3 Hrs	80	32	20	100	40
BCA102(B)	Kannada Kali (For Non Karnataka Students)	4	3 Hrs	80	32	20	100	40
BCA103	Basic Electrical & Electronics	4	3 Hrs	80	32	20	100	40
BCA104	Computer Concepts & Programming in C	4	3 Hrs	80	32	20	100	40
BCA 105	Indian Constitution	4	3 Hrs	80	32	20	100	40
BCA106	Computer Lab 1.1 (Based on BCA 104)	6	3 Hrs	80	32	20	100	40
BCA107	Computer Lab 1.2 (Based on BCA 103)	6	3 Hrs	80	32	20	100	40

QUESTION PAPER PATTERN

Question Paper Pattern for 101,103, 104 & 105

- A question paper consists of **EIGHT** questions.
- Each question carries 16 marks (This may consists of sub questions of different marks.)
- Attempt any **FIVE FULL QUESTIONS** (16 M x 5 Qns = 80 marks)

BCA101 (A) : MATHEMATICS - I

Total: 50Hrs

ALGEBRA:

Partial fraction, indices and logarithms with standard problems.

Progession: AP, GP, HP, Mathematical Induction, theory of equation –solution of quadratic, Cubic and biquadratic equations. Permutation & combinations, Binomial theorem & binomial coefficient **14 Hrs**

TRIGONOMETRY:

Angles, and their measurements, Radian Measures, Trigonometric functions of standard angles, compound angles, multiple and submultiples angles, Transformation formula, Heights and distance, graphs of trigonometric functions, Relation between sides and angles of a triangle, solutions of triangle **14 Hrs**

GEOMETRY:

Coordinate Systems, distance formula, section formula, locus of a point, Equations of straight line, angles between two straight lines, and pair of lines. **8 Hrs**

CALCULUS:

Limits, continuity, Differentiation and Application of derivatives, Maxima and Minima

14 Hrs

Reference

Engineering Mathematics, B. S. Grewal

B.C. A : 101 (B) : ACCOUNTING & FINANCIAL MANAGEMENT - I

Total: 50 Hrs

Introduction : History and Development of Accounting - Meaning, Objectives and functions of Accounting - Book - keeping *V/s* Accounting - Users of accounting data systems of book keeping and accounting - branches of accounting advantages and limitations of accounting.

Accounting Concepts and conventions : Meaning, need and classification, Accounting standards - meaning, need and classification of Indian accounting standards. Accounting principles V*Is* Accounting standards.

Financial Accounting Process : Classification of accounting transactions and accounts, rules of debit and credit as per Double Entry System. Journalisation and Ledger posting. Preparation of different subsidiary books: Purchase Day Book, Sales Day Book, Purchase Returns Day Book, Sales Returns Day Book and Cash Book.

Bank Reconciliation Statement : Meaning, Causes for difference - Advantages - Preparation of Bank Reconciliation Statements.

Accounting for Bill of Exchange : Meaning, Need, Definition, Parties to Bill of Exchange, Types of Bills.

Accounts Procedure : Honour of the Bill, Dishonour of the Bill, Endorsement, Discounting, Renewal, Bills for collection, Retirement of the Bill, Accommodation Bills, Bill Receivable Book and Payable Book.

Preparation of Trial Balance : Rectification of errors and Journal Proper.

Preparation of Final Accounts : Meaning, need and classification, Preparation of Manufacturing, Trading, Profit and loss accounts and Balances - Sheet of sales- traders and partnership firms.

Text Book:

1) S.Ramesh, B.S. Chandrashekar, A Text Book of Accountancy.

References:

1. V.A.- Patil & J.S. Korihalli, Book - Keeping and Accounting, R. Chand and Co. Delhi

2. R.S. Singhal, Principles of Accountancy, Nageen Prakash pvt. Ltd. Meerut

3. M.B. Kadkol, Book - Keeping and Accountancy, Renuka Prakashan, Hubli

4. Vithal,!. Sharma:..Accounting for Managememt, Macmillan publishers, Mumbai

5. B.S. Raman, Accountancy, United Publishers, Mangalore.

6. Tulsian, Accounting and Financial Management - I: Financial Accounting– Pearson Education.

B.C.A 103: BASIC ELECTRICALS & ELECTRONICS

Total: 50 Hr.

1. **Network theorems**: Introduction - Kirchoff's law: Loop and node method 0 analysis. Nortons Theorem. Superposition Theorem - Thevenin's Theorems – Maximun Power Transfer Theorem - Reciprocity Theorem - Delta/Star and Star/Delt Transformation. **6 Hrs**
2. **A.C. Fundamentals:** Alternating voltage and current - Sinusoidal alternating voltage and current - Generation of altering voltages and currents - Equation 01 alternating voltage and current - important a.c. terminology and their Important relations. Values of alternating voltage and current - Peak value - Average value - Average value 01 sinusoidal current - R.M.S. or effective value - R.M.S value of sinusoidal current importance of R.M.S. value of sinusoidal current - Importance of R.M.S values - Form factor and Peak factor - Phase, Phase difference -Representation of alternating voltages and currents - Phasor representation of sinusoidal quantities, Phsor diagram of sine waves of same frequency - Addition of alternating quantities, Phasor diagrams using r.m.s.values. Star & Delta Connection details (no conversion) **6 Hrs**
3. **Semiconducting Devices:** Atomic Structure, The Electron, Energy Band Theory of Crystals, Semiconductors, Diode Characteristics, Diode Forward Resistance, The Halfwave Diode Rectifier, The Full Wave Diode Rectifier, Full Wave Bridge Rectifier, Ripple, Ripple Factor, Shunt Capacitor Filter, Voltage Regulation, Zener Diode, Zener Diode Voltage Regulator. **6 Hrs**
4. **Number systems & logic gates :** Decimal System, Binary Number System, Octal Number System, Hexadecimal Number System, Binary Addition, Binary Subtraction, Fractional Numbers, binary coded decimal numbers, Logic Gates, Digital IC families DTL, TTL, ECL, MOS,CMOS, **6 Hrs**

5. **Boolean Algebra & KMAP simplification**

   DMorgan's theorem, Boolean algebra & its laws, simplification of logical expressions using Boolean algebra, Min Terms & Max Terms, Sum of products (SOP) & product of sum (POS), Karnaugh – MAP(KMAP), KMAP for two, three and four variable simplification. Half Adder & Full Adder., Flipflops & Counters **8 Hrs**

6. **Operational Amplifiers:** The Ideal Operational Amplifier, Saturable Property of an OPAMP, The Comparator, The Inverting OPAMP Circuit, The Non Inverting OPAMP Circuit, OP AMP Characteristics, OP AMP Applications. **5Hrs**

7. **Sinusoidul, Square Wave Oscillators:** Working of RC Wien Network oscillator, Crystal oscillator, astable multi vibrator using op amp. **4 Hrs**

8. **Communication Systems:** Basic Block diagram of communication system. Need for modulation, definition of amplitude modulation and frequency modulation. Expression for amplitude modulated wave and frequency modulated wave, comparison between AM & PM Modulating and demodulating circuits. **5 Hrs**

Text book:

1. V.K. Mehta, Basic Electricla Engineering.
2. Hughes: Hughes Electrical & Electronics Technology, 8/e. Pearson Education
3. Storey: Electronics: A Systems Approach, 2/e Pearson Education.

References:

1. V.N. Mittle, Basic Electrical Engineering - Tata - McGraw Hill Publishing Com. Ltd.
2. H. Cotton, Advanced Electrical Technology, Pitman Publication.
3. 3. -K.R.Krishnamurthy, M.R.Raghuveer : Electrical and Electronics Engineering for Scientists and Engineers, NEW AGE INTERNATIONAL (P) LTD. Bangalore
4. Millman and Hawkines : Integrated Electronics, TMH Publication (1999)
5. Sedra / Smith: Microelectronic circuits, Oxfprd University press (1998)
6. A.J.Die fender: Principles of Electronic Instrumentation, for RH. Holtan, , Saunders College publication (1998)
7. Allen Mottershead : Electronic Devices and circuits: PHI Publications (1997)
8. Kennedy and Davie: Electronic Communication systems, TMH Edition IV (1998)
9. Driscoll and Cognation: Op Amplifiers and liman integrated circuits, PHI Publications.(1990) Horwitz: Art of Electronics (1990).
10. Spencer: Introduction to Electronic Circuit Design Pearson Education 2003
11. Witte: Electronic, Instruments, 2/e. Pearson Education 2004
12. Tomasi: Electronic Communications Systems, 5/e Pearson Education 2004

BCA 104 COMPUTER CONCEPTS AND C PROGRAMMING

1. COMPUTER CONCEPTS:

1. Introduction to Computer : System logical organization, Von Neuman concept of computer system, Block diagram of computer system. Central Processing Unit (CPU), ALU,CU, Main memory, Input / Output unit. Brief history of computer generations. **3 Hrs**
2. Hardware: Input devices: keyboard, Mouse, Lightpen, Joystick, Scanner, Digitizer. Output devices: types of printers(impact & non impact), Plotters, display units(LCD, TFT, CRT), Secondary storage devices : Floppy disk, Hard disk, Flash memory & Optical disks. **4 Hrs**
3. Software: System software, Operating System, Application Software, utility software, Warmware & Bridgeware, Shelfware, Machine Level Language, Assembly language, Higher level programming languages, Assemblers, Compilers and editors. Introduction to Windows & Internet **4 Hrs**

Computer Programming:

1. Basic Programming concepts - Algorithm, flowcharts. Modular Programming and structured programming/Concepts. **2 Hrs**
2. Overview of C :Introduction, Importance of 'C', Sample 'C' Programs. Basic Structure of 'C' programs, Programming style. **2 Hrs**
3. Constants, Variables and Data types :'C' Tokens, keywords, and identifiers, constants. Variables. data types. declaration of variables, assigning values to variables. defining symbolic constants **2 Hrs**
4. Operators and expression: Arithmetic operators, Relational operators, Logical operators. Assignment operators, increment and decrement operators. Conditional operators , bitwise operators, special operators,. type conversion in expressions, operator precedence and associtivity, Built-in Mathematical functions **4 Hrs**

5. Managing input and output statements: I/O syntax, Programs based on I/O, arithmetic operations. **2 Hrs**
6. Branching and looping : Decision making with IF statement, simple IF statement, The IF-ELSE statement, nesting of IF .. ELSE statements, The ELSE -IF ladder. The switch statement, The operator, Ternary, Break, Continue, Exit & GOTO statement, The 'WHILE statement, Do-While & For Loop, **8 Hrs**
7. Arrays: One dimensional arrays, Two-dimensional arrays, initializing & declaring single dimensional array & Multidimensional arrays. **4 Hrs**
8. Handling of character strings: Unformatted string functions**,** Declaring and initializing string variables, reading string from terminal, writing string to screen, arithmetic operations on characters. **4 Hrs**
9. User defined functions: Need for user-defined functions, a multi-functional program, Return values and their types, calling a function, Types of functions, recursion, and functions with arrays. **4 Hrs**
10. Structure and union: Structure definition, giving values to members, structure initialization, comparison of structure variables, array as structure, array within structure, union. **4 Hrs**
11. Pointers : Understanding pointers, accessing the address of variables, declaring and initializing pointers, accessing a variable through its pointer. **3 Hrs**

Text Books

1. E.Balaguruswamy. : Programming in ANSI C" Tata Mc Graw-Hill (1998)
2. Kamthane, Programming with ANSI and Turbo C. Pearson Education 2003
3. S.Byron Gottfried.: "Programming with C" , Tata McGraw-Hill(2000)

References

1. V.Rajaraman.: "Fundamentals of Computers", PHI (EEE) (1999)
2. V.Rajaraman.: "Programming in C ", PHI (EEE) (2000)
3. Yashawant Kanetkar : "Let us C BPB Publication
4. Rajesh Hongal : "Computer Concepts & C language"
5. Brain verminghan & Dennis M. Ritchie "ANSI C Programming" (PHI)
6. Ramkumar & Rakesh Aggarwal "ANSI C Programming" Tata McGraw Hill
7. Kernighan, C - Programming Language ANSI C Version. Pearson Education.
8. Venkateshmurthy, Programming Techniques through C. Pearson Education

B.C.A. – 105 : INDIAN CONSTITUTION

Total: 50Hrs

1. Significance of the constitution: Making of the Constitution Pole of the Constituent Assembly, Salient features, the Preamble, Citizenship, Procedure for amendment of the Constitution. **10 Hrs**
2. Fundamentals Rights, the Right to Equality, the Right to Freedom, the Right against Exploitation, the Right to Freedom of Religion, Cultural and Educational Rights, the Right to Constitutional Remedies. **10 Hrs**
3. Nature of the Directive Principles of State Policy, Difference between of Fundamental Rights and Directive Principles of State Policy - Implementation of Directive Principles of State Policy, Fundamental Duties **8 Hrs**
4. Union Government - Powers and Functions of the President, the Prime Minister, Council of Ministers. Composition, powers "and functions of the Parliament., Organization of Judiciary, Jurisdiction of the Supreme Court, Independence of Judiciary. **12 Hrs**
5. State Government - Powers and Functions of Governor, Chief Minister, Council of "Ministers. COmpo-sition-Powers and Functions of State Legislature, Local Government and the Constitution, Relatior. between the Union and the States. **10 Hrs**

References:

1. M.V. Pylee, An Introduction to the Constitution ofIndia, New Delhi, Vikas 2005.
2. Subhash C. Kashyap, Our Constitution: An Introduction to India's constitution and constitutional Law, New Delhi, National Book Trust 2000.
3. Durga Das Basu, Introduction to the Constitution of India, New Delhi, Prentice Hall of India, 2001
4. D.C. Gupta, India Government and Politics, VIII Edition, New Delhi, Vikas, 1994.
5. J.C. Johari, Indian Government and Politics, Delhi, Sterling Publishers, 2004.
6. V.D. Mahajan, Constitutional Development and National Movement in India, New Delhi, S. Chand and Co. latest edition.
7. Constitution Assembly Debates, New Delhi, Lok Sabha Secretariat, 1989.
8. Granville Austin, Working of a Democratic Constitution: The Indian Experience, New Dilhi, Oxford University Press, 1999.
9. AP. A vasthi, Indian Government and Politics, Agra Naveen Agarwal, 2004
10. S.A. Palekar, Indian Constitution, New Delhi, Serials Publication, 2003.
11. Brij Kishore Sharma, Introduction to the Constitution of India (Second Edition), New Delhi, Prentice - Hall of India, 2004.
12. H.M. Rajasekhar, Understanding the Indian Constitution, Mysore, Prabodha, 2005.
13. J.N. Pandey, Constitutional Law ofIndia, Allahabad: Central Lay. Agenc), 2004.

B.C.A.- 106: COMPUTER LAB - 1.1 (Based on BCA - 104)

Simple Programs:

1. Write a Program to find the root of the given quadratic equation using switch case.
2. Write a C Program to generate and print first N FIBONACCI numbers.
3. Write a Program to find the GCD and LCM of two integer numbers
4. Write a C Program that reverse a given integer number and check whether the number is palindrome or not.
5. Write a Program to find whether a given number is prime number or not
6. Write a C Program to input numbers and to find mean variance and standard deviation.
7. Write a C Program to read two matrices and perform addition and; subtractions of two matrices. .
8. Write a C Program to read a string and check whether it is palindrome or not.
9. Write a Program to find the factorial of a number using function
10. Write a C Program to find if a character is alphabetic or numeric or special character.
11. Write a C Program to compute the sum of even numbers and the sum of odd numbers using a function.
12. Write a C Program to find trace and normal of a square matrix using functions.
13. Write a C Program to accept a sentence and convert all lowercase characters to uppercase and vice -versa. .
14. Write a Program to accept different goods with the number, price and date of purchase and display them.
15. Write a C Program to find the length of a string without using the built - in function.

B.C.A.-I07: COMPUTER LAB -1.2(Based on BCA 103)

List of Experiments: (At least any twelve experiments to be conducted),

1. Capacity of condenser by charging and discharging
2. Impedance matching (Maximum power transfer theorem)
3. Thevenin's & Norton's Theorem '.
4. LCR series & parallel resonance circuit.
5. Study of Lesazies figure.
6. Identification & measurement of R.L. & C in a black box.
7. Halfwave / Fullwave (Bridge Rectifier) using semiconductor diode.
8. Zener diode characteristics
9. Zener diode as a voltage regulator.
10. Realization of Logic gates (NOT, OR, AND, NAND, NOR & XOR using NAND gates

    NAND gates,
11. Demorgan's laws & given Boolean Expressions.
12. Inverting & Non-inverting amplifier using IC 741.
13. OP-AMP as an amplifier & study of gain - bandwidth product.
14. Design Half adder & full adder using NAND gates
15. IC 555 timer as Monostable Multivibrator.