

UNIVERSITY OF KOTA, KOTA

BACHELOR OF COMPUTER APPLICATION (BCA) Exam.- 2020-21

(Applicable for students admitted in Session 2020-21)

1. **Eligibility:** The basic eligibility for admission to the course is 10+2 in any discipline with minimum 45% marks, 4% relaxation in marks will be given to the SC /ST/OBC (except creamy layer) / SOBC / PH candidates. The admission in the course is based on merit of XII class. Reservation policy will be applicable as per the state government rules.
2. **Selection :** Based on merit in qualifying examination.

1. Scheme of Instruction:

Each year shall be of ten months (150 working days) duration. Details of lecture hours per week shall be as follows:

Theory: Three hours/week for each Paper

Practical: Students are required to work in the Laboratory for 4 hours per week for each practical under faculty guidance.

2. Examination Scheme:

1. University shall conduct examinations only after completion of 150 working days of instruction in a year.
2. Each theory paper shall be of 100 marks (75 marks for written examination of 3 hrs duration and 25 marks for internal assessment).
3. Each practical paper shall be of 100 marks.
4. The internal marks will be awarded by committee consisting of Head of the Department & the faculty concerned.
5. The student have to pass internal and external exam separately theory as well as practical papers.

Theory:

1. **Assignments:** 40% of the internal assessment marks for each theory paper will be awarded on the basis of performance in the assignments regularly given to the students, and its records.
2. **Internal Examination:** 40% of the total Internal Assessment marks for each theory paper will be awarded on the basis of performance in written examination conducted by the faculty, one at the end of fourth month and another at the end of eighth month.
3. **Seminar/Oral examination:** 10% of the total internal assessment marks for each paper will be awarded on the basis of performance either in a seminar or internal viva-voce.
4. **Overall performance:** 10% of the total internal assessment marks will be awarded for each paper on the basis of performance and conduct in the classroom.

Practical :

1. **Project:** 80% of the total Internal Assessment Marks for each practical paper during I & II year will be awarded on the basis of project, its presentation and project report submitted by the students. This activity can be held in the team of maximum two students. There should be a project co-ordinator (faculty member of computer science department).
2. **Internal examination:** 10 % of the total Internal Assessment marks for each practical paper during I & II year will be awarded on the basis of performance in practical examination conducted by the faculty, once during the session. In III year it will be 80%.
3. **Overall performance:** 10 % of the total internal assessment marks will be awarded during I & II year for each practical paper on the basis of performance and conduct of the student in the practical lab. In III year it will be 20%.

Note: Detailed breakup of Internal Marks awarded as per above guidelines must be submitted to the university in a tabular format for each paper. Department/College must preserve answer books of internal examination for a period one year from the date of examination and must be presented to the university as and when required.

- (a) **I division with distinction:** 80% or more marks in the aggregate provided the candidate has passed all the papers and examinations in the first attempt.
- (b) **I division :** 60% or more marks but fails to satisfy the criteria for being classified as first division with distinction laid in (a).
- (c) **II division :** All other than those included in (a) and (b) above i.e. $< 60\%$ and $\geq 45\%$.
- (d) Passing criteria is as per university ordinance. A candidate must pass the examinations within five years of the initial admission to the first year of the course.

BACHELOR OF COMPUTER APPLICATION (BCA)

I Year Exam 2020-21

Courses of Study and Examination

Paper	Paper Name	Lecture Hrs./week	Duration of exam. (hours)	Max. Marks		TOTAL
				University Exam.	Internal Assessment	
Paper-I (BCA-101)	Introduction to Information Technology	3	3	75	25	100
Paper-II (BCA-102)	Basic Mathematics	3	3	75	25	100
Paper-III (BCA-103)	Problem Solving through C Programming	3	3	75	25	100
Paper-IV (BCA-104)	Business Communication	3	3	75	25	100
Paper-V (BCA-105)	PC Software Packages	3	3	75	25	100
	Practical					
*Practical-I (BCA-106)	PC Software Lab	4(2+2)	3	75	25	100
*Practical-II(BCA-107)	Programming Lab	4(2+2)	3	75	25	100
	Total			525	175	700

*For each practical paper students have to submit the project.

BACHELOR OF COMPUTER APPLICATION (BCA)

II Year Exam

1. Courses of Study and Examination

Paper	Paper Name	Lecture Hrs./week	Duration of exam. (hours)	Max. Marks		TOTAL
				University Exam.	Internal Assessment	
Paper-I (BCA-201)	Digital Electronics & Computer Architecture	3	3	75	25	100
Paper-II (BCA-202)	Database Management System	3	3	75	25	100
Paper-III (BCA-203)	Fundamentals of Operating Systems	3	3	75	25	100
Paper-IV (BCA-204)	Data Structure	3	3	75	25	100
Paper-V (BCA-205)	Data Communication and Computer Networking	3	3	75	25	100
	Practical					
*Practical-I (BCA-206)	Database Management Lab	4(2+2)	3	75	25	100
*Practical-II(BCA-207)	Data Structure Lab	4(2+2)	3	75	25	100
	Total			525	175	700

*For each practical paper students have to submit the project.

BACHELOR OF COMPUTER APPLICATION (BCA)
III Year Exam

Courses of Study and Examination

Paper	Paper Name	Lecture Hrs./week	Duration of exam. (hours)	Max. Marks		TOTAL
				University Exam.	Internal Assessment	
Paper-I (BCA-301)	Software Engineering	3	3	75	25	100
Paper-II (BCA-302)	Visual Programming	3	3	75	25	100
Paper-III (BCA-303)	E- Commerce	3	3	75	25	100
Paper-IV (BCA-304)	Web Technology	3	3	75	25	100
Paper-IV (BCA-305)	Programming with Java	3	3	75	25	100
	Practical					
Practical-I (BCA-306)	Visual Programming Lab	3	3	75	25	100
Practical-II (BCA-307)	Web Technology + Java Lab	3	3	75	25	100
Practical-III(BCA-308)	Project	3	3	75	25	100
	Total			600	200	800

*For each practical paper students have to submit the project.

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B.C.A. (First Year) Exam
BCA - 101: Introduction to Information Technology

Time: 3 Hrs.

Max. Marks: 100

UNIT - I

Computer Basics: A Simple Model of a Computer, Characteristics of Computers, Problem-solving Using Computers, Algorithms.

Data Representation: Representation of Characters in computers, Representation of Integers, Representation of Fractions, Hexadecimal Representation of Numbers, Decimal to Binary Conversion, Error-detecting codes.

Input & Output Devices: Description of Input Units, Other Input Methods, Output Units.

UNIT - II

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.

Processor: Structure of Instructions, Description of a Processor, A Machine Language Program.

UNIT - III

Binary Arithmetic: Binary Addition, Binary Subtraction, Signed Numbers, Two's Complement Representation of Numbers, Addition/Subtraction of Numbers in 2's Complement Notation, Binary Multiplication, Binary Division, Floating Point Representation of Numbers, Arithmetic Operations with Normalized Floating Point Numbers.

Computer Architecture: Interconnection of Units, Processor to Memory communication, I/O to Processor Communication, Interrupt Structures, Multiprogramming, Processor Features, Virtual Memory.

UNIT-IV

Software Concepts: Types of Software, Software: Qualities & Attributes, Programming Languages: types and differences

Operating Systems: Definition, O.S. functions and O.S. types : brief introduction. A Brief History of: Linux, MS-DOS, Windows Operating System.

UNIT - V

Computer Generation & Classifications: First, Second, Third, Fourth and Fifth Generation, Classification of computers, Concept of Distributed and parallel computers.

Internet: Network, World Wide Web, Uniform Resource Locator, Web Browsers, IP Address, Domain Name, Internet Service Providers, Introduction to Internet Security, Internet Requirements, Web Search Engine, Net Surfing, Internet Services, Intranet and Extranet, how to connect with internet.

Text / Reference Books

1. "Computer fundamental", P.K.Sinha BPB Publications.
2. Fundamentals of Computers, V. Rajaraman, 3rd Edition, PHI Publications
3. Essentials of Computer & Network Technology, Nasib S. Gill, Khanna Publications.
4. Fundamentals of Information Technology, Deepak Bharihoke, Excel Books.
5. Information Technology by Reena Dadhich and R.C. Poonia, Vardhman Publications, 2009.

BCA - 102: Basic Mathematics

Time: 3 Hrs.

Max. Marks: 100

UNIT - I

Number System, LCD & GCD, Fibonacci numbers, Sequences and series : AP, GP and HP, Sum of n terms, arithmetic–geometric- harmonic means between two numbers (excluding arithmetic- geometric series).

Logarithms: definition, Laws regarding product, quotient, exponent and change of base.

UNIT – II

SETS: Sets, subsets, equal sets, null set, universal set, finite & infinite sets, open & closed sets etc., operations on sets, partition of sets, Cartesian product.

UNIT - III

RELATIONS AND FUNCTIONS : relation, properties of relations, equivalence relation, equivalence relation with partition , partial order relation, maximal and minimal points, pigeonhole principle, function, domain and range, onto, into and one-to-one functions, composite functions, inverse functions, introduction of algebraic, trigonometrically, logarithmic, exponential, hyperbolic functions, zeros of functions.

UNIT – IV

DIFFERENTIATION: Derivative, derivatives of sum, differences, product & quotients, derivatives of composite functions, logarithmic differentiation, mean value theorem, expansion of functions, (Maclaurin's & Taylor's.), indeterminate forms, L'Hospitals rule, maxima & minima, concavity, asymptote, singular points, curve tracing, successive differentiation & Leibnitz theorem.

UNIT - V

Basic concepts of Graph Theory: Vertices, edges, degree, paths, circuits, cycles, complete graphs and trees.

Multi-graphs, weighted graphs and directed graphs, Adjacency matrix of a graphs. Connected and disconnected graphs.

Permutations (Simple and under restrictions), combinations (selections with and without replacement).

Text / Reference Books

1. Elements of Discrete Mathematics, C. L. Liu.: Tata Mc-Graw Hill.
2. Addison-Wesley , Thomas, G.B. and R. L. Finney: 9th edition.
3. Mathematics for Engineers, Prasad Mudranalaya, Allahabad, Chandrika Prasad : 19th edition.
4. Differential Calculus, Shanti Narayan:S. Chand & Co.
5. Integral Calculus, Shanti Narayan:S. Chand & Co.

BCA -103: Problem Solving through C Programming

Time: 3 Hrs.

Max. Marks: 100

UNIT- I

Algorithm and algorithm development: Definition and properties of algorithm, flow chart symbols, example of simple algorithms. Program design, errors: syntax error and semantic error, debugging, program verification, testing, documentation and maintenance.

Variable names, data type and sizes, constants, declarations, arithmetic operators, relational and logical operators, type conversions, increment and decrement operators, bitwise operators, assignment operators and expressions, precedence and order of evaluation, standard input and output statements.

UNIT- II

Control Flow: Statements and blocks, if-else, nested if, switch, looping statement: while, for, do-while, break and continue, go-to and labels.

Arrays : declarations, integer and character array, reading and writing an array, one and two dimensional array, operations on arrays.

UNIT – III

Functions and Program Structure: Basics of function, function definition and declaration, external variables, scope rules, header files, static variables, register variables, block structure, initialization, recursion, the C preprocessor.

Pointer : Pointers and addresses, pointers and function arguments, address arithmetic. Character pointers, pointers to pointers, Pointers to functions.

UNIT - IV

Structures: Basics of structures, structures and functions, arrays of structures, pointers to structures, self-referential structures, typedef, unions.

UNIT - V

File Handling: access methods, different file operations and functions, concept of text & Binary files, file I/O, command line argument, formatted file input and output.

Text / Reference Books

1. Computer science Volume I and II, Deendayalu R., Second Edition, Tata McGraw-Hill Publishing Company Limited, New Delhi.
2. Fundamentals of computers, Rajaraman V., Second Edition, Prentice Hall of India Private Limited, New Delhi.
3. The C Programming Language, Kernighan B.W. and Ritchie D.M., Prentice Hall of India Private Limited, New Delhi.
4. How to solve it by computers. Dromey R., Prentice Hall of India Private Limited, New Delhi.
5. Programming with C, E. Balaguruswamy, PHI

BCA -104: Business Communication

Time: 3 Hrs.

Max. Marks: 100

UNIT - I

Concepts and Fundamentals: Meaning of communication, Importance of communication, Communication scope, 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 communication.

UNIT - II

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

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

UNIT - III

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.

UNIT - IV

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).

UNIT - V

Arts of Listening: Good listening for improved communications, Art of listening, Meaning, nature and importance of listening, Principles of good listening, Barriers in listening.

Text / Reference Books

1. Communication by C.S. Rayudu, Himalaya Publishing House.
2. Communication Today - Understanding Creative Skill by Reuben Ray, Himalaya Publishing House.
3. Successful Communication by Malra Treece, Himalaya Publishing House.
4. Business Communication Today by Bovee & Thill, McGraw Hill.
5. Principles of Business Communication by Murphy and Hilderbrandth, Tata McGraw Hill.
6. Effective Communication Skills by O. N. Kaul & K. K. Sharma, Creative Publishers
7. Essentials of Business Communication by Rajendra Pal & J. S. Korlahalli, Sultan Chand & Sons.
8. Business Communication by K. K. Sinha, Allied Publishers Limited.

BCA-105 PC Software Packages

Time: 3 Hrs.

Max. Marks: 100

UNIT – I

DOS: Introduction, history & versions of DOS, DOS basics- Physical structure of disk, drive name, FAT, file & directory structure and naming rules, booting process, DOS system files, DOS commands: internal & external.

UNIT – II

GUI Based OS: Concepts, Features, Structure, Desktop, Taskbar, Start Menu, My Computer, Recycle Bin, Accessories- Calculator, Notepad, Paint, Word-pad, Character Map, Explorer, Entertainment, Managing Hardware & Software- Installation of Hardware & Software, Using Scanner, System Tools, Communication, Sharing Information between programs.

UNIT – III

Word Processing: Features, Creating, Saving and Opening Documents in Word, Interface, Toolbars, Ruler, Menus, Keyboard Shortcut, Editing, Previewing, Printing & Formatting a Document, Advanced Features of MS Word, Find & Replace, Using Thesaurus, Using Auto- Multiple Functions, Mail Merge, Handling Graphics, Tables & Charts, Converting a word document into various formats like- Text, Rich Text format, Word perfect, HTML etc.

UNIT – IV

Worksheet: Worksheet basics, creating worksheet, entering into worksheet, heading information, data, text, dates, alphanumeric values, saving & quitting worksheet, Opening and moving around in an existing worksheet, Toolbars and Menus, Keyboard shortcuts, Working with single and multiple workbook, working with formulae & cell referencing, Auto sum, Copying formulae, Absolute & relative addressing, Worksheet with ranges, formatting of worksheet, Previewing & Printing worksheet, Graphs and charts, Database, Creating and Using macros, Multiple worksheets- concepts, creating and using.

UNIT – V

Introduction to Power Point: Creating slide show with animations, Designing Presentations.

Case Study of web editing tool and DBMS tool such as: Front Page, Ms-Access Creating & using databases in Access.

Text / Reference Books

1. Introduction to computers by P.K. Sinha & Priti Sinha, BPB Publication, 1992.
2. Microsoft 2000, 8 in 1 by Joe Habraken, PHI
3. Window XP Computer Reference , BPB Publication.
4. IT Tools and Applications by A. Mansoor, Pragma Publications, Mathura.
5. DOS Quick Reference by Rajeev Mathur, Galgotia Publications.
6. Ms Office XP Computer, BPB Publications.