

Department of Distance Education
Punjabi University, Patiala
 SYLLABUS
BACHELOR OF COMPUTER APPLICATIONS
OUTLINE OF PAPERS AND TESTS
FOR
B.C.A. First Year(1st Semester)
2020-21, 2021-22 and 2022-23 SESSIONS

Code	Title of Paper	University Examination	Internal Assessment	Max. Marks	Exam. Duration Hours
BCA-111	General English – I	75	25	100	3
BCA-113	Fundamentals of Information Technology	75	25	100	3
BCA-114	Programming Fundamentals using C	75	25	100	3
BCA-115	Software Lab –I (Windows and Office Automation)	60	40	100	3
BCA-116	Software Lab – II (Based on paper BCA-114: Programming Fundamentals using C)	60	40	100	3
Total		420	180	600	

Note:

- i. 75% marks would be awarded as the basis of Internal test conducted during 2nd PCP.
- ii. 25% marks would be awarded as the basis of attendance of both PCP's.

**OUTLINE OF PAPERS AND TESTS
FOR
B.C.A. First Year (2nd Semester)
2020-21, 2021-22 and 2022-23 SESSIONS**

Code	Title of Paper	University Examination	Internal Assessment	Max. Marks	Exam. Duration Hours
BCA-121	General English – II	75	25	100	3
BCA-123	Digital Electronics	75	25	100	3
BCA-124	Data Structures	75	25	100	3
BCA-125	Basic Mathematics	75	25	100	3
BCA-126	Software Lab – III (based on BCA-124: Data Structures)	60	40	100	3
BCA-127	Drug Abuse : Problem, Management and Prevention***	70	30	100	3
Total		435	165	600	

Note:

- i. 75% marks would be awarded as the basis of Internal test conducted during 2nd PCP.
- ii. 25% marks would be awarded as the basis of attendance of both PCP's.

*** BCA-127: Drug Abuse: Problem, Management and Prevention is a compulsory qualifying paper as per university guidelines, the marks for this paper are not counted for the total marks for the degree.

SEMESTER- I

BCA-111: GENERAL ENGLISH – I

AS APPROVED BY DEPARTMENT OF ENGLISH

**B.C.A (General English - I) Part-I (Semester I)
for Sessions 2020-21, 2021-22 & 2022-23**

Time Allowed : 3Hours

Max.Marks: 100
Written Examination: 75 Marks
Internal Assessment: 25 Marks
Pass Marks: 40 (30+10)

INSTRUCTIONS FOR THE PAPER -SETTER

The question paper shall consist of three Units. Unit-I shall be of 23 marks; Unit-II shall be of 22 marks; and Unit-III shall carry 30 marks; and shall contain questions from the preceding Units, thus covering the entire syllabus.

COURSE CONTENT

The following texts are prescribed:

- (I) **Prose Parables**, Orient Blackswan Private Limited-2013.

The following six stories from this book are to be studied:

- (i) Kabuliwallah, *Rabindranath Tagore*
- (ii) The Eyes are Not Here, *Ruskin Bond*
- (iii) The Death of a Hero, *Jai Nimbkar*
- (iv) Grief, *Anton Chekhov*
- (v) Uncle Podger Hangs a Picture, *Jrome K. Jerome*
- (vi) The Doctor's Word, *R.K. Narayan*

- (II) **The Student's Companion** by Wilfred D.Best, Rupa & Co.

The following portions of this book are to be studied:

- (a) Single words for Phrases and Sentences
 1. Words denoting Numbers
 2. Words denoting Places
 3. Words denoting Professions or Trades
 4. Names by which Persons with certain characteristics are known.
- (b) Word frequently mis-spelt.

- (III)

- (i) **Intermediate English Grammar**, 2nd Edition by Raymond Murphy. Cambridge University Press. The following units are to be studied:
Units 1 to 26 and Appendices 1 to 4.
- (ii) **Intermediate English Grammar Supplementary Exercises** by Hashemi and Murphy. Cambridge University Press. The following units are to be studied:
Exercises from this book which are relevant to Units 1 to 26 (from **Intermediate English Grammar**).

TESTING

UNIT-I

- I. One essay type question with an internal alternative on theme, incident, character or main ideas from **Prose Parables**. The answer should not exceed 200 words.

11 marks

- II. 4 short-answer questions to be set from **Prose Parables** out of which candidate shall attempt any 3 in 50-60 words each.

4X3=12 marks

UNIT-II

- III. (i) One passage of 10 sentences to be translated from Punjabi into English .

10 marks

- (ii) 8 phrases or sentences each of one mark to be substituted by single words from the prescribed portions of **The Student's Companion** all of which shall be attempted by candidates.

1x8=8 marks

- (iii) 4 mis-spelt words to be set from the prescribed portion of **The Student's Companion** whose correct versions are to be provided by candidates.

1x4=4marks

UNIT-III

- IV 15 sentences each of one mark to be set from exercises of the prescribed units of **Intermediate English Grammar** and those of **Intermediate English Grammar, Supplementary Exercises** out of which candidates shall attempt any 12 sentences.

1x12=12 marks

- V. (i) Four very short answer questions from **Prose Parables**. Each question is to be attempted in 80-100 words.

4x2=08 marks

- (ii) 10 sentences to be set from the exercises of the prescribed units of the books on **Grammar and Supplementary Exercises**. All sentences are to be attempted.

1x10=10 marks

BCA-113: FUNDAMENTALS OF INFORMATION TECHNOLOGY**Max Marks: 75****Maximum Time: 3 Hrs.****Min Pass Marks: 35%****Instructions for the paper setter**

The question paper will consist of three sections: A, B & C. SECTIONs A & B will have four questions each from the respective sections of the syllabus carrying 15 marks for each question. SECTION C will have 5-10 short-answer type questions carrying a total of 15 marks, which will cover the entire syllabus uniformly.

Instructions for the candidates

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C.

SECTION A

Computer Fundamentals: Block diagram of a computer, characteristics of computers and generations of computers. Categories of Computers - Supercomputer, mainframe computer, network server, Workstation, Desktop computers, notebook computer, Tablet PC, handheld PC, smart phone.

Input Devices: Keyboard, Mouse, Joy tick, Track Ball, Touch Screen, Light Pen, Digitizer, Scanners, Speech Recognition Devices, Optical Recognition devices – OMR, OBR, OCR

Output Devices: Monitors, Impact Printers - Dot matrix, Character and Line printer, Non Impact Printers – DeskJet and Laser printers, Plotter.

Memories: Memory Hierarchy, Primary Memory – RAM, ROM, Cache memory. Secondary Storage Devices - Hard Disk, Compact Disk, DVD, Flash memory.

Software: Types of Software- System Software, Application Software, Firmware. Type of System Software: Operating Systems, Language Translators, Utility Programs, Communications Software.

Commonly Used Application Software: Word Processor, Spreadsheet, Database, Education, Entertainment Software.

Computer Languages: Machine language, assembly language, high level language, 4GL.

SECTION B

Number System: Non-positional and positional number systems, Base conversion, Concept of Bit and Byte, binary, decimal, hexadecimal, and octal systems, conversion from one system to the other. Binary Arithmetic: Addition, subtraction and multiplication, 1's complement, 2's complement, subtraction using 1's complement and 2's complement.

Computer Codes: weighted and non-weighted code, BCD, EBCDIC, ASCII, Unicode.

Computer Network: Network types, network topologies.

Internet Related Concepts: Internet, World Wide Web, Hypertext, Uniform Resource Locator, Web Browsers, IP Address, Domain Name, Internet Services Providers, Internet Security, Web Search Engine, Net Surfing, web portal, Wiki, Blog.

Advanced Trends in IT : Mobile Internet, GPS, 3G, 4G, Wi-Fi, Bluetooth, Cloud Technology, Virtual LAN Technology, Firewall, E-Commerce, M-Commerce, Nanotechnology, Virtual Reality, BPO and KPO, Online shopping, Social Media - YouTube, FaceBook, LinkedIn, Twitter, Google+.

Applications of IT: IT in Business and Industry, IT in Education & training, IT in Science and Technology, IT and Entertainment, Current Trends in IT Application - AI, Virtual Reports, voice recognition, Robots, Multimedia Technology.

Reference Books:

1. Peter Nortorn, Introduction to Computers, Seventh Edition
2. V. Rajaraman, Fundamentals of Computers, PHI.
3. Larry E. Long and Nancy Long, Computers: Information Technology in Perspective, PHI.
4. N. Subramanian, Introduction to Computers, Tata McGraw-Hill.
5. D.H. Sanders, Computers Today, McGraw- Hill.

BCA-114: PROGRAMMING FUNDAMENTALS USING C**Max Marks: 75****Maximum Time: 3 Hrs.****Min Pass Marks: 35%****Instructions for the paper setter**

The question paper will consist of three sections: A, B & C. SECTIONs A & B will have four questions each from the respective sections of the syllabus carrying 15 marks for each question. SECTION C will have 5-10 short-answer type questions carrying a total of 15 marks, which will cover the entire syllabus uniformly.

Instructions for the candidates

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C.

SECTION A

Programming Process: Problem definition, Algorithm development, Flowchart, Coding, Compilation and debugging.

Basic structure of C program: History of C, Structure of a C program, Character set, Identifiers and keywords, constants, variables, data types.

Operators and expressions: Arithmetic, Unary, Logical, Relational operators, assignment operators, Conditional operators, Hierarchy of operations type conversion.

Control statements: branching statements (if, if else, switch), loop statements (for, while and do-while), jump statements (break, continue, goto), nested control structures.

Functions: Library functions and user defined functions, prototype, definition and call, formal and actual arguments, local and global variables, methods of parameter passing to functions, recursion.

I/O functions: formatted & unformatted console I/O functions

SECTION B

Storage Classes: automatic, external, static and register variables.

Arrays: – One dimensional and two dimensional arrays

Declaration, initialization, reading values into an array, displaying array contents

Strings: input/output of strings, string handling functions (strlen, strcpy, strcmp, strcat & strev), table of strings.

Structures and unions: using structures and unions, comparison of structure with arrays and union.

Pointers: pointer data type, pointer declaration, initialization, accessing values using pointers, pointers and arrays.

Introduction to Files in C: opening and closing files. Basic I/O operation on files.

Reference Books:

- 1 E. Balagurusamy, Programming in C, Tata McGraw-Hill.
- 2 Kernighan and Ritchie, The C Programming Language, PHI.
- 3 Byron Gotfried, Programming in C.
- 4 Kamathane, Programming in C, Oxford University Press.

**BCA-115: SOFTWARE LAB – I
(Windows and Office Automation)****Max Marks: 100****Maximum Time: 3 Hrs.****Min Pass Marks: 35%**

This laboratory course will comprise the following list of practicals based on Windows and concepts of Office Automation.

List of Assignments

Windows 7

Activity 1: Windows 7 Installation and Software & Drivers installation.

Activity 2: Basic components of Window-Desktop, Icons, Taskbar, Status Bar, Wallpapers, Screen Saver

Activity 3: Start Menu: Accessories- Notepad, Calculator, Clock, Date and Time, Disk Defragmentation, Working with Control Panel.

Activity 4: Taskbar properties - Maximize Minimize, Restore, and Close.

Activity 5: Creating Files, Folders, Shortcuts, Moving folders (right click options)

MS-Excel**Activity 1:**

- i. Create, open, save and close workbook?
- ii. Create a new worksheet, renaming and moving sheet.
- iii. Entering, copying, moving and deleting data in cells and worksheets.
- iv. Insert and delete cells, columns and rows in MS-Excel.

Activity 2:

- i. Formatting of data in cells:-
- ii. Text formatting (font size, font style, font color, Cell border etc.)
- iii. Text Alignment
- iv. Text Orientation, Text Direction, Text Control.

Activity 3:

- i. Find and replace data in a sheet
- ii. Perform data sorting and data filtering in MS-Excel
- iii. Protect your Worksheet and Workbook?
- iv. Enter and perform some basic formulas in ms-excel.

Activity 4:

- i. Perform some basic Functions in MS-Excel.
- ii. Create a chart in MS-Excel.
- iii. Create different types of Charts in excel.
- iv. Set a size, margin, orientation of page in Ms-Excel.
- v. The print properties of a worksheet in MS-Excel.

Activity 5:

- i. Hide and unhide row and column in MS-Excel
- ii. Set column width and row height in MS-Excel.
- iii. Adding text Box, header/footers, pictures and special symbols in your worksheet.
- iv. Arranging, splitting and hiding windows in MS-Excel. And also freezing panes.
- v. Create and run Macros in MS-Excel.

MS-Word**Activity 1:**

- i. Create, open, save and close a document.
- ii. Typing, copying, moving and deleting data in word document.

- iii. Perform Save and Save as, Cut and Copy, Paste and Paste Special.

Activity 2:

Formatting of data in word Document:-

- i. Text formatting (font size, font style, font color, subscript, superscript, upper/lower case etc.)
- ii. Text Alignment and character spacing
- iii. Indention and line spacing
- iv. Border and shading
- v. Bullets and Numbering

Activity 3:

- i. Find and replace and data sorting in a document.
- ii. Protect your document.
- iii. Add chart in word document. Create different types of Charts in word.
- iv. Set a size, margin, orientation of page, Hyphenation, Columns and Line Numbers in MS-Word.

Activity 4:

- i. Set Page Color, Page Border, Themes, and Watermarks in MS-Word
- ii. Adding Tables, header/footers, pictures, page numbers and special symbols, Text Box in your word document.
- iii. Showing Ruler, Gridlines, Document Map, Thumbnails, Inserting Word Art, Drop Cap, Hyperlink, Equation etc. in word document

Activity 5:

- i. Arranging, splitting windows in MS-word
- ii. Perform Mail-merge in MS-word
- iii. Create and run Macros in MS-Word
- iv. Set the print properties of a word document

PowerPoint**Activity 1:**

- i. Create, open, save and close a Presentation
- ii. Typing, copying, moving and deleting data in presentation.
- iii. New Slide, understanding Slide Layout, adding and deleting slides.

Activity 2:

Formatting of data in slides:-

- i. Text formatting (font size, font style, font color, subscript, superscript, upper/lower case etc.)
- ii. Text Alignment and character spacing
- iii. Indention and line spacing
- iv. Border and shading
- v. Bullets and Numbering

Activity 3:

- i. Set a size, margin, orientation of slides in PowerPoint.
- ii. Adding Tables, header/footers, pictures, page numbers and special symbols, Text Box etc. in your presentation

Activity 4:

- i. Adding Animation and Transition Effects in Slides, Understanding Slide Show
- ii. Presentation Views, Understanding Formatting commands in PowerPoint

Activity 5:

- i. Create and run Macros in PowerPoint
- ii. Arranging, splitting windows in MS-PowerPoint.

BCA-116: SOFTWARE LAB – II**(Based on paper BCA-114: Programming Fundamentals using C)****Max Marks: 100****Maximum Time: 3 Hrs.****Min Pass Marks: 35%**

This laboratory course will comprise as exercises to supplement what is learnt under paper BCA-114: Programming Fundamental using C. Students are required to develop the following programs with internal documentation:

1. Operators and data types in C

- a) Write a program to print the size of all the data types supported by C and its range.
- b) Write a program to convert temperature from Fahrenheit to Celsius.
- c) Write a program to find simple interest and compound interest.

2. Control statements

- a) Write a program to check whether the given number is a even number or not.
- b) Write a program to accept three numbers and find the largest among them.
- c) Write a program to count the different vowels in a line of text using switch.
- d) Write a program to accept two numbers and perform various arithmetic operations (+, -, *, /) based on the symbol entered.
- e) Write a program to find factorial of a number.
- f) Write a program to check whether a number is prime or not.
- g) Write a program to print all prime numbers between any 2 given limits.
- h) Write a program to check whether a number is palindrome or not.
- i) Write a program to print all the Armstrong numbers between any 2 given limits.

4. Arrays and strings

- a) Write a program to find largest element in an array.
- b) Write a program to find sum and average of numbers stored in an array.
- c) Write a program to check whether a string is a Palindrome.
- d) Write a program to perform matrix addition.
- e) Write a program to perform matrix multiplication.

6 Functions and recursion

- a) Write a program to find the roots of a quadratic equation using function.
- b) Write a recursive program to find the factorial of a number.
- c) Write a recursive program to find the nth Fibonacci number.

7. Structures and unions

- a. Create an employee structure and display the same.
- b. Create a student database storing the roll no, name, class etc and sort by name.

8. Pointers

- a. Write a function to swap two numbers using pointers
- b. Write a program to access an array of integers using pointers

9. Files

- a. Create a file and store some records in it. Display the contents of the same. Count numbers of characters, words and lines in the file.

SEMESTER- II

BCA-121: GENERAL ENGLISH – II

AS APPROVED BY DEPARTMENT OF ENGLISH

**B.C.A (General English - II) Part-I (Semester II)
for Sessions 2020-21, 2021-22 & 2022-23**

Time Allowed: 3Hours

Max. Marks: 100
Written Examination: 75 Marks
Internal Assessment: 25 Marks
Pass Marks: 40 (30+10)

INSTRUCTIONS FOR THE PAPER -SETTER

The question paper shall consist of three Units. Unit-I shall be of 23 marks; Unit-II shall be of 22 marks; and Unit-III shall carry 30 marks and shall contain questions from the preceding Units, thus covering the entire syllabus.

COURSE CONTENT

The following texts are prescribed:

- (I) ***The Poetic Palette*** (Orient BlackSwan, Second Edition, 2016)
The following poems from this anthology are prescribed:
1. Pippa's Song: Robert Browning
 2. Apparently With No Surprise: Emily Dickinson
 3. Fool and Flea: Jeet Thayil
 4. Magic Of Love: Helen Farries
 5. The Charge of the Light Brigade: Alfred Tennyson
 6. Where the Mind is Without Fear: Rabindranath Tagore
 7. The Soul's Prayer: Sarojini Naidu
 8. I Sit and Look Out: Walt Whitman
 9. Women's Rights: Annie Louise Walker
 10. Goodbye Party for Miss Pushpa T.S.: Nissim Ezekiel
- (II) **The Student's Companion** by Wilfred D.Best, Rupa & Co.
The following portions of this book are prescribed:
- (a) Single words for Phrases and Sentences
1. Words pertaining to Government.
 2. Words pertaining to Marriage
 3. Words pertaining to Science and Arts.
 4. Words pertaining to The Medical Profession
- (b) Antonyms and Synonyms.
- (III)
1. **Intermediate English Grammar** 2nd Edition by Raymond Murphy. Cambridge University Press. The following units are to be studied:
Units 27 to 51 and Appendices 4 and 5.
 2. **Intermediate English Grammar Supplementary Exercises** by Hashemi and Murphy. Cambridge University Press. The following units are to be studied:
Exercises from this book which are relevant to Units 27 to 51 (from **Intermediate English Grammar**) are prescribed.

TESTING**UNIT-I**

- I. One essay type question with an internal alternative from **The Poetic Palette**. The answer should not exceed 250 words. 11 marks
- II. 3 short-answer questions to be set from **The Poetic Palette** out of which candidate shall attempt any 2 in 120 words each. 2X6=12 marks

UNIT-II

- III. One paragraph of about 120 words to be written on any one of the four given topics. 10 marks
- IV. 8 phrases or sentences each of one mark to be substituted by single words from the prescribed portions of **The Student's Companion** all of which shall be attempted by candidate. 1x8=8 marks
- V. 4 words (2 for antonyms and 2 for Synonyms) to be set form the prescribed portion of **The Student's Companion**. All words are to be attempted. 1x4=4marks

UNIT-III

- VI. 15 sentences each of one mark to be set form exercises of the prescribed units of **Intermediate English Grammar** and those of **Intermediate English Grammar Supplementary Exercises** out of which candidates shall attempt any 12 sentences. 1x12=12 marks
- VII. Four very short answer questions from **The Poetic Palette**. Each question is to be attempted. 4x2=08 marks
- VII. 10 sentences to be set form the exercises of the prescribed units of the books of **Grammar and Supplementary Exercises**. All sentences are to be attempted. 1x10=10 marks

BCA-123: DIGITAL ELECTRONICS**Max Marks: 75****Maximum Time: 3 Hrs.****Min Pass Marks: 35%****Instructions for the paper setter**

The question paper will consist of three sections: A, B & C. SECTIONs A & B will have four questions each from the respective sections of the syllabus carrying 15 marks for each question. SECTION C will have 5-10 short-answer type questions carrying a total of 15 marks, which will cover the entire syllabus uniformly.

Instructions for the candidates

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C.

SECTION-A

Fundamental Concepts: Introduction to Analog and Digital Systems, Digital Signals, Basic Digital Circuits: AND, OR, NOT, NAND, NOR, XOR and XNOR gates. Boolean algebra theorems, Characteristics of Digital IC.

Number Systems: Positional and Non-positional number systems, Binary, Decimal, Octal and Hexadecimal, Base conversions, Binary arithmetic: Addition and Subtraction, 1's complement, 2's complement, subtraction using 1's complement and 2's complement.

Combinational Logic Design: SOP and POS Representation of Logic functions, K-Map representation and simplification up to 4 variable expressions, Don't care condition.

SECTION - B

Multiplexers: 4X1, 8X1 and 16X1. De-multiplexers: 1 to 4, 1 to 8 and 1 to 16. BCD to Decimal decoder, Decimal to BCD encoder. Parity generator and Parity checker. Design of Half adder and Full adder

Flip-Flops: Introduction, Latch, Clocked S-R Flip Flop, Preset and Clear signals, D-Flip Flop, J-K Flip Flop, The race-around condition, Master Slave J-K Flip Flop, D-Flip-Flop, Excitation Tables of Flip Flops. Edge-Triggered Flip Flops.

A/D and D/A Converters: Introduction, Digital to Analog Converters: Weighted-Register D/A converter, R-2R Ladder D/A converter. Analog to Digital Converters: Quantization and encoding, Parallel-comparator A/D converter, Counting A/D converter.

Reference Books:

1. Modern Digital Electronics by R. P. Jain, Fourth Edition, TMH
2. Digital Principles and Applications by Albert Paul Malvino and Donald P. Leach, Fourth Edition, TMH
3. Digital Electronics: An Introduction to Theory and Practice by William H Gothmann, 2nd Edition, PHI

BCA-124: DATA STRUCTURES**Max Marks: 75****Maximum Time: 3 Hrs.****Min Pass Marks: 35%****Instructions for the paper setter**

The question paper will consist of three sections: A, B & C. SECTIONs A & B will have four questions each from the respective sections of the syllabus carrying 15 marks for each question. SECTION C will have 5-10 short-answer type questions carrying a total of 15 marks, which will cover the entire syllabus uniformly.

Instructions for the candidates

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C.

SECTION A

Basic concepts and notations: Types of data structures, Data structure operations, Mathematical notations and functions, Algorithmic complexity, Big 'O' notation, Time and space trade off.

Arrays: Linear array, representation of array in memory, traversing linear array, insertion and deletion in an array, Two-dimensional array, row major and column major orders, sparse matrix.

Stacks: Representation of stacks in memory (linked and sequential), operations on stacks, Applications of stacks: string reversal, parentheses matching.

Queues: Representation of queues in memory (linked and sequential), operations on queues, insertion in rear, deletion from front.

SECTION B

Linked list: Representation of linked list using static and dynamic data structures, insertion and deletion of a node from linked list, searching in link list, searching in sorted link list.

Trees: Definition and basic concepts, linked representation and representation in contiguous storage, binary tree, binary tree traversal, Binary search tree, searching, insertion and deletion in binary search tree.

Searching and sorting algorithms: Linear and binary search, bubble sort, insertion sort, selection sort, quick sort, merge sort.

Reference Books

1. Seymour Lipschutz, Theory and Practice of Data Structures, McGraw-Hill.
2. Vishal Goyal, Lalit Goyal, Pawan Kumar, A Simplified Approach to Data Structures, Shroff Publications.
3. Y. L. Tenenbaum, and A. J. Augenstein, Data Structures using C and C++, PHI.
4. Robert Sedgewick, Algorithms in C, Pearson Education.

BCA-125: BASIC MATHEMATICS**Max Marks: 75****Maximum Time: 3 Hrs.****Min Pass Marks: 35%****Instructions for the paper setter**

The question paper will consist of three sections: A, B & C. SECTIONs A & B will have four questions each from the respective sections of the syllabus carrying 15 marks for each question. SECTION C will have 5-10 short-answer type questions carrying a total of 15 marks, which will cover the entire syllabus uniformly.

Instructions for the candidates

Candidates are required to attempt two questions each from the sections A & B of the question paper and the entire section C. Non Programmable Scientific Calculator is allowed.

SECTION A

Complex Numbers: Complex Numbers in the form of $a+ib$, Real and Imaginary parts of a complex number, Complex conjugate, algebra of complex numbers, square roots of a complex number, cube roots of unity.

Quadratic Equations: Solutions of Quadratic equations (with real and complex coefficients), Relations between roots and coefficients, Nature of roots, Equations reducible to quadratic equations.

Cartesian System of Rectangular Coordinates: Cartesian coordinate system, distance formula, section formula, centroid and incentre, area of triangle, condition for collinearities of three points in a plane.

Straight Line: Slope of a line, parallel and perpendicular lines, Equation of line in different forms, distance of a point from a line.

Circle: Standard form of equation of circle, General form, diameter form, three point form, Intersection of a line and a circle.

SECTION B

Matrices: Types of Matrices, Addition, Subtraction, Multiplication, Transpose, Conjugate and their properties, Symmetric, Skew-symmetric, Minor, co-factors, Adjoint, Inverse of matrices, Solution of linear system of equations using matrices.

Rank of a matrix, consistency of linear system of equations,

Determinants: Expansion of determinants (upto order 4), solution of linear system of equations using Cramer rule.

Reference Books:

1. NCERT Textbooks of Mathematics for +1 and +2.
2. M K. Jain, S.R.K. Iyengar and R.K. Jain, " Numerical Methods for Scientific and Engineering Computation", Wiley.
3. B. S. Grewal, Higher Engineering Mathematics", Khanna Publishers.

BCA-126: SOFTWARE LAB – III
(Based on paper BCA-124: Data Structures)

Max Marks: 100*

Maximum Time: 3 Hrs.

Min Pass Marks: 35%

This laboratory course will comprise as exercises to supplement what is learnt under paper BCA-124: Data Structures. Students are required to develop *following* programs in C language with internal documentation

- 1 Program to insert an element in an array.
- 2 Program to delete an element from an array.
- 3 Program to store an array using sparse representation.
- 4 Program to apply various operations on stack.
- 5 Program for parenthesis matching using stack.
- 6 Program for String reversal using stack.
- 7 Program to insert and delete nodes in a queue.
- 8 Program to insert and delete nodes in a linked list.
- 9 Program to search a node in a linked list.
- 10 Program to insert or delete node in a binary tree.
- 11 Program to traverse binary tree.
- 12 Program for implementing linear search.
- 13 Program for implementing binary search.
- 14 Program for implementing Bubble sort.
- 15 Program for implementing Selection sort.
- 16 Program for implementing Insertion sort.
- 17 Program for implementing Quick sort.
- 18 Program for implementing Merge sort.

**OUTLINE FOR THE SYLLABUS OF A MODULE ON
DRUG ABUSE: PROBLEM, MANAGEMENT AND PREVENTION**

Sessions 2019-2020, 2020-2021 & 2021-2022

(FOR ALL UNDERGRADUATE COURSES)

Note: This is a compulsory qualifying paper, which the students have to study and qualify during three years of their degree course.

PRIVATE & DISTANCE EDUCATION STUDENTS

Max Marks: 100

Max Time: 3hrs.

INSTRUCTIONS FOR THE PAPER SETTERS

The question paper will consist of three sections A, B and C. Each of sections A and B will have three questions from the respective sections of the syllabus. Each question shall carry 15 marks. Section C will consist of 20 short answer type of 2 marks each.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt any two questions from section A and any two questions from section B. Section C is compulsory.

SECTION A

UNIT: I – Problem of Drug Abuse: Concept and Overview; Types of Drug Often Abused

(a) Concept and Overview

What are drugs and what constitutes Drug Abuse?

Prevalence of menace of Drug Abuse

How drug Abuse is different from Drug Dependence and Drug Addiction?

Physical and psychological dependence- concepts of drug tolerance

(b) Introduction to drugs of abuse: Short Term, Long term effects & withdrawal symptoms

Stimulants: Amphetamines, Cocaine, Nicotine

Depressants: Alcohol, Barbiturates- Nembutal, Seconal, Phenobarbital
Benzodiazepines –Diazepam, Alprazolam, Flunitrazepam

Narcotics: Opium, morphine, heroin

Hallucinogens: Cannabis & derivatives (marijuana, hashish, hash oil)

Steroids

Inhalants

UNIT: II –Nature of the Problem

Vulnerable Age Groups

Signs and symptoms of Drug Abuse

(a)- Physical indicators

(b)- Academic indicators

(c)- Behavioral and Psychological indicators

SECTION B

UNIT: III – Causes and Consequences of Drug Abuse

a) Causes

Physiological

Psychological

Sociological

b) Consequences of Drug Abuse

For individuals

For families

For society & Nation

Unit: IV- Management & Prevention of Drug Abuse

Management of Drug Abuse

Prevention of Drug Abuse

Role of Family, School, Media, Legislation & Deaddiction Centers

Suggested readings

1. Kapoor.T. (1985) Drug Epidemic among Indian Youth, New Delhi: Mittal Pub
2. Modi, Ishwar and Modi, Shalini (1997) Drugs: Addiction and Prevention, Jaipur: Rawat Publication.
3. Ahuja, Ram, (2003), Social Problems in India, Rawat Publications: Jaipur
4. 2003 National Household Survey of Alcohol and Drug Abuse. New Delhi, Clinical Epidemiological Unit, All India Institute of Medical Sciences, 2004.
5. World Drug Report 2011, United Nations Office of Drug and Crime.
6. World Drug Report 2010, United Nations Office of Drug and Crime.
7. Extent, Pattern and Trend of Drug Use in India, Ministry of Social Justice and Empowerment, Government of India, 2004.
8. The Narcotic Drugs and Psychotropic Substances Act, 1985, (New Delhi: Universal, 2012)

Pedagogy of the Course Work:

The pedagogy of the course work will consist of the following:

70% lectures (including expert lectures).

30% assignments, discussion and seminars and class tests.

Note: A visit to drug de-addiction centre could also be undertaken.