

MANGALORE UNIVERSITY



State Education Policy – 2024 [SEP-2024]

CURRICULUM STRUCTURE

FOR

**BACHELOR OF COMPUTER APPLICATIONS
BCA-ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING**

CURRICULUM STRUCTURE FOR I TO VI SEMETER BCA- ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

Semester I								
Sl. No	Course Code	Title of the Course	Category of Courses	Teaching Hours per Week	SE E	IA	Total Marks	Credits
1		Language-I	Lang	4	80	20	100	3
2		Language-II	Lang	4	80	20	100	3
3	BCA – AIML-1.1	Fundamentals of Information Technology	Core	4	80	20	100	3
4	BCA - AIML -1.2	Problem Solving using C	Core	4	80	20	100	3
5	BCA - AIML -1.3	Computational Mathematics	Core	5	80	20	100	5
6	BCA- AIML -1.4	Fundamentals of Information Technology Lab	Practical	4	40	10	50	2
7	BCA - AIML –1.5	C Programming Lab	Practical	4	40	10	50	2
8		Constitution/ Values	Compulsory	2	40	10	50	2
Sub - Total				31	520	130	650	23

SEMESTER - I

Program Name	BCA-AIML	Semester	I
Course Title	Fundamentals of Information Technology (Theory)		
Course Code:	BCA- AIML -1.1	No.of Credits	03
Contact hours	4 Hours per Week	Duration of SEA/Exam	3 Hours
Formative Assessment Marks	20	Summative Assessment Marks	80

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to:

- Understand the fundamentals of computer system
- Identify different components within the computer system
- Understand different types of input and output devices
- Demonstrate the working concepts of different devices connected to computer
- Explain different generations of programming languages and their significance
- Exploring MS Office Word 2007,Access 2007,Excel 2007 And Powerpoint 2007

Unit	Description	Hours
1	Computer Basics: Introduction, Characteristics computers, Evolution computers, Generation of computers, Classification of computers, the computer system, Application of computers. Computer Architecture: Introduction, Central processing unit-ALU, Registers, Control unit, system bus, main memory unit, cache memory, communication between various units of a computer system. Components inside a computer system – System case, Power supply, Mother board, BIOS, Ports and Interfaces, Expansion card, Ribbon cable, Memory chips, Processors	13

2	<p>Computer memory and storage : Introduction, memory representation, memory hierarchy, Random access memory, Types of RAM, Read-only memory, Types of ROM, RAM, ROM and CPU interaction.</p> <p>Secondary Storage: Types of secondary storage device - Magnetic tape, magnetic disk, Floppy disk, Hard disk, Advantages and disadvantages of magnetic disk,</p> <p>Computer Software: Introduction, categories of software, system software, Operating Systems, device drivers, language translators, System Utility, Application Software</p> <p>Operating Systems: Introduction, Functions of an operating System, Classification of Operating Systems</p>	13
3	<p>Input devices: Introduction, Types of input devices, Keyboard, Mouse, Introduction to Track ball, Joystick, light pen, Touch screen and track pad. Speech recognition, digital camera, webcam, flat bed scanner,</p> <p>Output devices: Types of output, Classification of output devices, Printers- Dot matrix, drum printer, Ink jet, Laser, Hydra, Plotter, Monitor- CRT, Displaying graphics on CRT, Colour display on CRT, LCD, Differences between LCD and CRT</p> <p>Computer programming languages: Introduction, Developing a program, Program development cycle, Types of programming languages, generation of programming languages, Features of a good programming language.</p>	13

4	<p>Word processing software: Word environment, using files and folders ,working with text, working with tables ,checking spelling and grammar, printing document</p> <p>Spreadsheet software: Excel environment, formatting and Copying formulas, working with rows and columns, additional features and charting</p> <p>Presentation software: Introduction, PowerPoint environment, creating a new presentation, working with different views, using masters, adding animation, adding transition.</p> <p>Microsoft Access: Access environment, Database objects.</p>	13
----------	---	-----------

Text Book:

1. ITL Education Solution Limited, Introduction to Information Technology, Pearson-Second Edition.

Reference Books:

1. A K SHARMA, Computer Fundamentals and Programming in C, Universities Press, 2nd edition, 2018
2. Peter Norton, Introduction to Computers, 7th edition, Tata McGraw Hill Publication, 2011
3. Anita Goel, Computer Fundamentals, Pearson Education, 2011.

Pedagogy: Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe- Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.

Program Name	BCA -AIML	Semester	I
Course Title	Problem Solving using C (Theory)		
Course Code:	BCA –AIML- 1.2	No.of Credits	03
Contact hours	4 Hours per Week	Duration of SEA/Exam	3 Hours
Formative Assessment Marks	20	Summative Assessment Marks	80

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to:

- Confidently operate Desktop Computers to carry out computational tasks
- Understand working of Hardware and Software and the importance of operating systems
- Understand programming languages, number systems, peripheral devices, networking, multimedia and internet concepts
- Read, understand and trace the execution of programs written in C language
- Write the C code for a given problem
- Perform input and output operations using programs in C
- Write programs that perform operations on arrays

Unit	Description	Hours
1	<p>Computer Programming and Languages – Introduction, Algorithm, Flowchart, Program Control Structures, Programming Paradigms, Programming Languages.</p> <p>Introduction to C: Overview of C Program, Importance of C Program, Basic structure of a C-program, Programming style, Execution of C Program.</p> <p>Constants, Variables & Data types: Character set, C token, Keywords & identifiers, Constants, Variables, data types, Declaration of variables, Declaration of storage class, Assigning values to variables, defining symbolic constants.</p>	13

2	<p>Operators and Expression: Arithmetic, Relational, logical, assignment, increment & decrement, conditional, bit wise & special operators, Arithmetic expressions, Evaluation of expressions, Precedence of arithmetic operators, type conversions in expressions, operator precedence and associativity, built in mathematical functions.</p> <p>Managing Input and Output operations: Reading a character, Writing a Character, formatted input-inputting integer numbers, inputting real numbers, inputting character strings, reading mixed-data types, formatted output-output of integer numbers, output of real numbers, printing of mixed data types.</p> <p>Decision Making and Branching: 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, the go to statement.</p>	13
3	<p>Decision making and looping: The while statement, the do statement, for statement, jumps in loops</p> <p>Arrays: Introduction, one dimensional arrays, declaration and initialization of one dimensional arrays, two dimensional arrays, initializing two dimensional arrays.</p> <p>Handling of Strings: Declaring & initializing string variables, reading strings from terminal, writing strings to screen, Arithmetic operations on characters, Putting strings together, Comparison of two strings, String Handling functions, table of strings.</p> <p>User defined functions: Need for user defined functions, Declaring, defining and calling functions return values and their types, Function calls, Function declaration, Categories of functions: With/without arguments, with/without return values. Recursive functions.</p> <p>The scope, visibility and lifetime of variables.</p>	13
4	<p>Structures and union: Defining a structure, Declaring structure variables, structure initialization, copying and comparing structure variables, operations on individual members, arrays of structures, arrays within structures, Unions.</p> <p>Pointers: Understanding pointers, initialization of pointer variables, accessing a variable through its pointer, chain of pointers, pointer expressions, pointer increments and scale factor, pointers and arrays.</p>	13

	<p>File Management- Defining and Opening a file, closing a file, Input/Output operations on files, Error handling during I/O operations</p>	
<p>Text Books:</p> <ol style="list-style-type: none"> 1. Introduction to Information Technology ITL education solution Ltd, Second Edition 2. E Balagurusamy, Programming in ANSI C, 7th Edition, Tata McGraw Hill. <p>Reference Books:</p> <ol style="list-style-type: none"> 1. Deitel, P., & Deitel, H. (2012). C How to Program (7th ed.). Prentice Hall. 2. Kanetkar, Y. (2016). Let Us C (15th ed.). BPB Publications. 3. Kernighan, B. W., & Ritchie, D. M. (1988). The C Programming Language (2nd ed.). Prentice Hall. 4. Schildt, H. (2017). C: The Complete Reference (4th ed.). McGraw Hill Education. 5. Kochan, S. G. (2014). Programming in C (4th ed.). Addison-Wesley. 6. K.R. Venugopal, Sudeep R Prasad, Programming with C, 4th Edition, Tata McGraw-Hill Education. 		

Pedagogy: Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe- Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.

Program Name	BCA -AIML	Semester	I
Course Title	Computational Mathematics(Theory)		
Course Code:	BCA –AIML- 1.3	No.of Credits	05
Contact hours	5 Hours per Week	Duration of SEA/Exam	3 Hours
Formative Assessment Marks	20	Summative Assessment Marks	80

Course Outcomes (COs):

After the successful completion of the course, the student will be able to:

- Study and solve problems related to connectives, predicates and quantifiers under different situations.
- Develop basic knowledge of matrices and to solve equations using Cramer’s rule.
- Know the concept of Eigen values.
- To develop the knowledge about derivatives and know various applications of differentiation.
- Understand the basic concepts of Mathematical reasoning, set and functions

Unit	Description	Hours
1	<p>Logarithms: Introduction, Definition, Laws of operations, change of base.</p> <p>Binomial theorems: Introduction, Binomial theorem, Position of terms.</p> <p>Analytical geometry: Introduction, directed line, midpoint, distance between two points, Section formula, external division, coordinates of a centroid, Area of a triangle.</p> <p>The straight line: slope of a straight line, different forms of equations of the straight line.</p> <p>Circle: The equation of a circle, different forms of circles, General equation of the circle, equation of tangent and normal to the circle.</p>	15

2	<p>Matrix Algebra: Definition, types of matrices, algebra of matrices – addition of matrices, subtraction of matrices, multiplication of matrices, determinant of a matrix, Adjoint of a matrix, orthogonal and unitary matrix, rank of a matrix, echelon form of a matrix, normal form of a matrix, equivalence of matrices. Inverse of matrix.</p> <p>Solutions of Linear equations: Matrix method, Cramer’s rule.</p> <p>Arithmetic progression: Definition, formula for nth term, sum to n terms, Arithmetic mean, problems.</p> <p>Geometric progression: Definition, formula for nth term, sum to n terms, geometric mean, problems.</p>	15
3	<p>Mathematical logic: Introduction, statements, Connectives, negation, conjunction, disjunction, statement formulas and truth tables, conditional and bi Conditional statements, tautology, contradiction, equivalence of formulas, duality law, Predicates and Quantifiers, arguments, Joint Daniel.</p> <p>Sets: Definition, notation, inclusion and equality of sets, the power set, Operations on sets, Venn diagram, ordered pairs, and n-tuples, Cartesian product.</p> <p>Relations: Introduction, properties of a binary relation in a set, Relation matrix and graph of a relation, equivalence relations, compatibility relations, composition of Binary relation.</p> <p>Functions: Definition and introduction, types of functions, composition of functions, inverse functions.</p>	15
4	<p>Counting: Basics of counting, Pigeonhole principle, Permutation and combination, Generalized.</p> <p>Permutations and Combinations: Generating permutation and combination, inclusion and exclusion.</p> <p>Graphs: Graphs and Graph models, Graph Terminology and Special Types of Graphs, Representing Graphs and Graph Isomorphism, Connectivity, Euler and Hamilton Paths, Shortest-Path Problems, Planar Graphs, Graph Colouring.</p>	15

	<p>Trees: Directed tree, leaf node, branch node, ordered tree, degree of a node, forest, descendent, m-ary tree, conversion of directed tree into a binary tree</p> <p>Applications of Discrete Mathematics in Modelling Computation: Language and Grammars – Introduction, Phrase-Structured, Types, Derivation Trees; Finite State Machines with Output – Introduction, Finite State Machines, Types; Finite State Machines without Output - Introduction, Set of Strings, Finite State Automata, Language Recognition by FSM; Language Recognition – Introduction; Turing Machine – Introduction, Definition</p>	
<p>Text Books:</p> <ol style="list-style-type: none"> 1. D C Sancheti and V K Kapoor, Business Mathematics, Sultan Chand & Sons, 2011 2. P R Vittal, Business Mathematics and Statistics, Margham Publications, Chennai. 3. J P Trembley and R Manohar, Discrete Mathematical Structures, McGraw Hill Education Private Limited, New Delhi. 4. Kenneth H Rosen, Discrete Mathematics and Its Applications., Seventh edition, 2012 5. C. L. Liu, D. P, Mohapatra, Elements of Discrete Mathematics, 4th Edition McGraw Hill Education Private Limited, New Delhi. 		

Pedagogy: Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe- Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.

Program Name	BCA -AIML	Semester	I
Course Title	Fundamentals of Information Technology Lab		
Course Code:	BCA –AIML-1.4	No.of Credits	02
Contact hours	4 Hours per Week	Duration of SEA/Exam	3 Hours
Formative Assessment Marks	10	Summative Assessment Marks	40

PART-A: MS WORD

1. Prepare a document using different formatting tools

Highlights of the National Education Policy (NEP) 2020



Note4Students

From UPSC perspective, the following things are important :

Prelims level : National Education Policy

Mains level : Need for imbuing competitiveness in Indian education system

New Policy aims for **universalization of education** from pre-school to secondary level with 100 % Gross Enrolment Ratio (GER) in school education by 2030. NEP 2020 will bring 2 crores out of school children back into the mainstream through the open schooling system.

- ❖ The current 10+2 system to be replaced by a **new 5+3+3+4 curricular structure** corresponding to ages 3-8, 8-11, 11-14, and 14-18 years respectively. **This will bring the hitherto uncovered age group of 3-6 years under the school curriculum, which has been recognized globally as the crucial stage for the development of mental faculties of a child.**
- ❖ The new system will have 12 years of schooling with three years of Anganwadi/ pre-schooling.
 - Emphasis on Foundational Literacy and Numeracy, no rigid separation between academic streams, extracurricular, vocational streams in schools; Vocational Education to start from Class 6 with Internships
 - Teaching up to at least Grade 5 to be in mother tongue/ regional language. No language will be imposed on any student.
- Assessment reforms with **360° Holistic Progress Card**, tracking Student Progress for achieving Learning Outcomes
- A new and comprehensive National Curriculum Framework for Teacher Education, NCFTE 2021, will be formulated by the NCTE in consultation with NCERT.
- By 2030, the minimum degree qualification for teaching will be a 4-year integrated B.Ed. degree.
- Gross Enrolment Ratio in higher education to be raised to **50% by 2035; 3.5 crore seats to be added in higher education.**
- The policy envisages broad-based, multi-disciplinary, holistic Under Graduate Program with flexible curricula, creative combinations of subjects, integration of vocational education and multiple entries and exit points with appropriate certification.
- **Academic Bank of Credits to be established to facilitate Transfer of Credits**

Multidisciplinary Education and Research Universities (MERUs), at par with IITs, IIMs, to be set up as models of best multidisciplinary education of global standards in the country.

Affiliation of colleges is to be **phased out in 15 years** and a stage-wise mechanism is to

be established for granting graded autonomy to colleges.

Over a period of time, it is envisaged that every college would develop into either an Autonomous degree-granting College or a constituent college of a university.

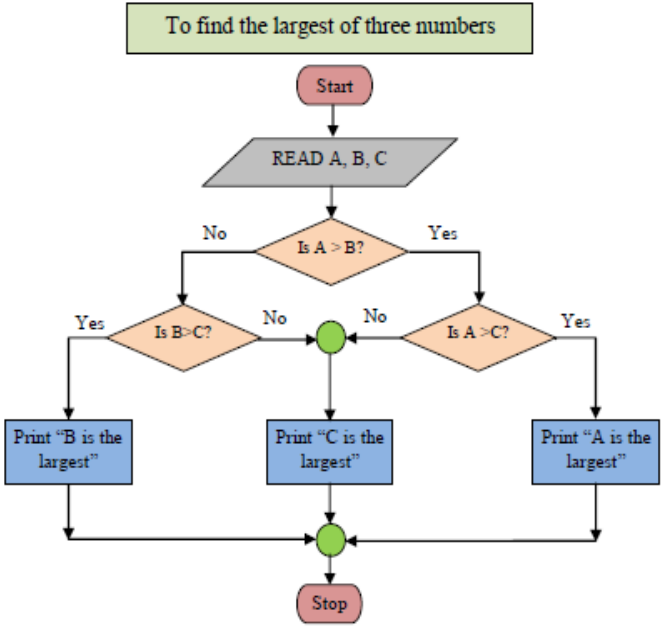
$$\frac{df}{dt} = \lim_{h \rightarrow 0} \frac{f(t+h) - f(t)}{h}$$

$$(a + b)^2 = a^2 + 2ab + b^2$$

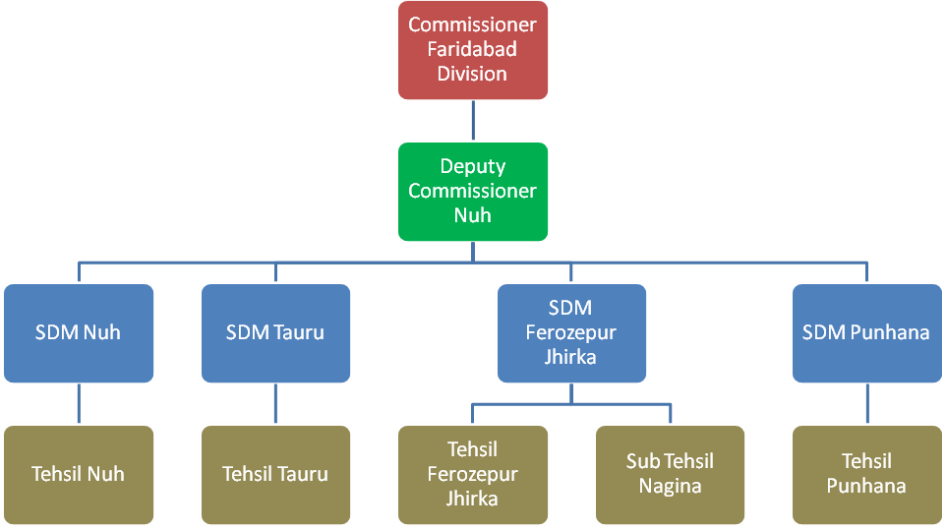
$$(a - b)^2 = (a + b)^2 - 4ab$$

$$a^2 + b^2 = (a - b)^2 + 2ab$$

2. Prepare a document using SmartArt and Shapes tools



Organization Chart – Administration Faridabad Division



3. Prepare a document with table to store sales details of a company for different quarters and calculate total, average and find maximum, minimum sales value.

Branch Code	Branch	Sales in Quarters				Total	Avg
		1	2	3	4		
A101	Mangalore	354690	244610	383290	413670		
A102	Udupi						
Total (Across Branches)							
Average (Across Branches)							
Highest Sales (Across Branches)							
Lowest Sales (Across Branches)							

TIME TABLE

Class : IBCA				Room No. 206			
Day	I	II	III	IV		V	VI
Monday					LUNCH BREAK		
Tuesday							
Wednesday							
Thursday							
Friday							
Saturday							***

4. Prepare interview call letters for five candidates describing about the company and instructions about the interview. Use Mail merge feature

Interview call Letter Format

Date:

[Name of the candidate]

[Address]

Dear [name of the candidate]

This is to the reference of your application for the job [name of the job] indicating interest in seeking employment in our organisation. We thank you for the same.

We would like to inform you that your profile is being shortlisted for the job role and is best suited for it. Therefore, we would like to take a face to face interview with you on [date of interview] at [venue details].

We hope that the venue is suitable for you. If not please get in touch with us, so that we can arrange the date and venue according to your availability.

The company will reimburse you all the expenses incurred by you for this interview. This letter has an attachment in which you need to fill the details and carry it along on the date of interview. Please carry your CV also along with you.

Kindly confirm your availability for the date and venue. If there are any changes to be done, please contact us at phone number: [999xxxx999] and email id: abcnd@mail.com.

We look forward to seeing you.

Regards,

Name of the Manager

Designation Name

Company name

PART-B: MS POWERPOINT

1. Create a presentation (minimum 5 slides) about your college. It should contain images, chart, Bulleted text... The slides should be displayed automatically in a loop.
2. A simple quiz program. Use hyperlinks to move to another slide in the presentation to display the result and correct answer/wrong answer status. Use at least four questions.

[Navigation must be done by hyperlink]

3. Create a presentation for a business proposal (minimum 5 slides).
 - Slides must include company logo in header
 - A title slide with table of contents
 - financial data of the company in the table
 - Company sales and profit in charts
 - Make use of animation and transition

4. Create a presentation for a college project (minimum 5 slides).
 - Master slide
 - Add comments for each slide
 - Add Audio and video to the slide
 - Add header and footer.
 - Add source citation
 - Make use of animation and transition

[Presentation must include title slide, Module Design, Chart, references]

PART-C: MS EXCEL

(Note: Give proper titles, column headings for the worksheet. Insert 10 records for each exercise in such a way to get the result for all the conditions. Format the numbers appropriately wherever needed).

1. Create a worksheet to maintain student information such as *RollNo, Name, Class, Marks in three subjects* of 10 students. Calculate total marks, average and grade. Find grade for Distinction, First class, Second class, Pass and Fail using normally used conditions.

- Using custom sort, sort the data according to class: - Distinction first, First Class next, and so on. Within each class, average marks should be in descending order.

- Also draw the Column Chart showing the RollNo versus Average scored.

(Note: Worksheet creation and formatting 2 marks, calculations: 3 marks, sorting: 2 marks, chart: 3 marks)

2. Prepare a worksheet to store details of electricity consumed by customers. Details are Customer No, Customer Name, Meter No, Previous meter reading, Current meter reading of 10 customers. Calculate total number of units consumed and total amount to be paid by each consumer using following conditions:

- If unit consumed is up to 30, charge is 100.
- 31 to 100 units, 4.70 per unit
- 101 to 200 units, 6.25 per unit
- Above 200 units, 7.30 per unit.
- Use Data validation to see that current reading is more than previous reading.
- Arrange the records in the alphabetic order of names.
- Filter the records whose bill amount is more than Rs.1500.

(Note: Worksheet creation and formatting 2 marks, Data validation: 2 marks, calculations: 2 marks, sorting: 2 marks, filtering: 2 marks)

3. Create Employee worksheet having EmpNo, EmpName, DOJ, Department, Designation and Basic Pay of 8 employees. Calculate DA, HRA, Gross Pay, Profession Tax, Net Pay, Provident Fund as per the rule:

- $DA = 30\%$ of basic pay
- $HRA = 10\%$ of basic pay if basic pay is less than 25000, 15% of basic pay otherwise.
- $Gross = DA + HRA + Basic\ pay$
- Provident fund = 12% of Basic pay or Rs.2000, whichever is less.
- Profession Tax = Rs.100 if Gross pay is less than 10000, Rs.200 otherwise.
- $NetPay = Gross - (Professional\ tax + Provident\ Fund)$
- Using Pivot table, display the number of employees in each department and represent it using Pie chart.

(Note: Worksheet creation and formatting 2 marks, calculations: 3 marks, Pivot table: 3 marks, Chart: 2 marks)

4. Create a table COMMISSION containing the percentage of commission to be given to salesmen in different zones as follows:

Zone	Percentage
South	10
North	12.5
East	14
West	13

Create another table SALES in the same worksheet to store salesman name, zone name, place, name of the item sold, rate per unit, quantity sold. Calculate total sales amount of each salesman. Referring the COMMISSION table, write the formula to compute the commission to be given. (Hint: Use if function and absolute cell addresses)

Using advanced filtering show the result in other parts of the worksheet.

- Show the records of various zones separately.
- Show the records of only East and West zones.
- Display the details of the items sold more than 50, in South or North zones.

(Note: Worksheet creation and formatting: 2 marks, calculations: 2 marks, filtering: 6 marks)

PART-D: MS ACCESS

1. Create Employee database and table Emp using MS ACCESS with following Structure

Emp no	Ename	Designation	Dep tno	DOJ	Basic Salary
101	RAMESH	MANAGER	10	10/10/2000	25000
102	SMITHA	CLERK	12	12/5/1999	15000
103	DEVIKA	ATTENDER	10	11/9/2001	12000
104	RAJESH	HR	15	15/4/2000	12000
105	GIRISH	SUPERVISOR	12	6/11/2005	18000
106	SATHYA	DRIVER	16	11/9/2001	11000
107	MANOJ	SWEEPER	10	22/6/2006	8000
108	BHOOMIKA	SECURITY	15	12/5/1999	10500
109	KIRAN	CLERK	14	11/9/2001	15000
110	PRATHIKSHA	SUPERVISOR	10	8/8/2005	18000

Perform following operation

- a) List all the Employees Who are working in Dept no.10
- b) List all the Employees who get less than 20000 Salary
- c) Update Salary by adding the increments as per the following:-
 - i. 10% Increment in Basic Salary who get < 20000
 - ii. 5% Increment in Basic Salary who get >=20000.

2. Create the “ Order” database and a table “Orderdtl” having following records:

Order No	Order Date	Order Item	Order Qty	Order Price	Client Code	Delivery Type	Order Status
1011	12/02/2015	LED Monitors	100	750000	1025	Road	Delivered
1012	12/03/2015	CPU	12	500000	1026	SHIP	Not Delivered
1005	15/02/2014	Keyboard	80	48000	1027	Road	Delivered
1010	02/02/2016	LED Monitors	30	64000	1028	Flight	Delivered
1016	19/4/2015	Scanner	40	35000	1029	Road	Delivered
1009	9/05/2018	LED Monitors	25	125000	1030	Flight	Not Delivered
1008	13/8/2017	CPU	25	450000	1031	SHIP	Delivered
1014	1/7/2018	Printer	50	90000	1032	Road	Not Delivered

Execute following Query

- a. Display all the Order No. which have not been yet Delivered.
- b. Display all the Orders of LED Monitor and CPU.
- c. Display all the Orders of LED Monitor and CPU which are not have been delivered yet.

3. Create a “Stock” database having “Inventory” table:

Item Code	Item Name	Opening Stock(Qty)	Purchase(Qty)	Sale (Qty)	Closing Stock(Qty)	Remark
101	MONITOR	100	25	35		
102	PRINTER	75	40	15		
103	SCANNER	120	30	20		
104	CPU	50	35	10		
105	KEYBOARD	105	45	55		

Perform the followings:

- a) Calculate the closing stock of each item (Closing Stock = Opening Stock + Purchase – Sales)
 - b) Display all the Items which has closing stock < 100
 - c) If closing stock is less than 100 then set the remark as “Re-Order Level” otherwise “Enough Stock”.
4. Create a “Company” database having “Sales” table with fields saleid, quarter, product, no_of_sales.

Perform the followings:

- a. Design a form to insert records to Sales table
- b. Generate a report to display Sales details of product based on quarters.

Evaluation Scheme for Lab Examination:

Assessment Criteria		
Program-1	MS WORD	8Marks
Program-2	MS POWERPOINT	7 Marks
Program-3	MS EXCEL	10
Program-4	MS ACCESS	10
Practical Record		05 Marks
Total		40 Marks

Program Name	BCA-AIML	Semester	I
Course Title	C Programming Lab		
Course Code:	BCA-AIML-1.5	No.of Credits	02
Contact hours	4 Hours per Week	Duration of SEA/Exam	3 Hours
Formative Assessment Marks	10	Summative Assessment Marks	40

PART – A

1. Program to find the roots of quadratic equation using else if ladder.
2. Program to read two integer values & a operator as character and perform basic arithmetic operations on them using switch case (+, -, *, / operations)
3. Program to reverse a number and find the sum of individual digits. Also check for palindrome.
4. Program to calculate and display the first ‘n’ Fibonacci numbers
5. Program to find given number is a prime or not.
6. Program to count occurrences of each character in a given string.
7. Program to read string with alphabets, digits and special characters and convert upper case letters to lower case and vice a versa and retain the digits and special characters as it is.
8. Program to search for number of occurrences of number in a list of numbers using one-dimensional array also display its positions.

PART-B

1. Program to find the largest and smallest elements with their position in a one-dimensional array.
2. Program to read ‘n’ integer values into a single dimension array and arrange them in ascending order using bubble sort method.
3. Menu driven Program to perform addition and multiplication of two Matrices
4. Program to find nCr and nPr using recursive function to calculate factorial.
5. Program to read a string and count number of letters, digits, vowels, consonants, spaces and special characters present in it using user defined function

6. Program sort a list of strings in ascending order using Pointers
7. Program to enter the information of a student like name, register number, marks in three subjects into a structure and display total, average and grade Display details in a neat form
8. Write a menu driven program to
 - a. Create a text file
 - b. Append the contents of a text file to another existing file by accepting filenames
 - c. Display the content of entered filename
 - d. Exit

Create two text files during the execution of the program. Display their contents. Perform Appending. Display the contents again. Always check for the existence of the inputted file names.

Evaluation Scheme for Lab Examination:

Assessment Criteria		
Program-1	PART-A Writing:7 Marks Execution:8Marks	15Marks
Program-2	PART-B Writing:10 Marks Execution:10 Marks	20 Marks
Practical Record		05 Marks
Total		40 Marks