Gondwana University, Gadchiroli

Choice Based Credit System (CBCS) Syllabus
of

Bachelor of Computer Application (B.C.A.) - I
(Three Years Degree Course)

Prepared by

Dr. S. B. Kishor

2017-2018

BCA I (Semester I)

Subject	Paper Code	Paper Name	Total Period# /Week	Credit	% of Assessment			Min. Passing (35%)
					IA	UE	Total	
Ability Enhancement Compulsory Course (AECC-I and AECC-II)	UBCAT101	**English (Business Communication –I)**	4	4	20	80	100	**35**
	UBCAT102.1 UBCAT102.2 UBCAT102.3	**Elective** 1. **Supplementary English** 2. **Marathi** 3. **Hindi**	4	4	20	80	100	**35**
Core Courses (Core I and Core II)	UBCAT103	**Information &Communication Technology**	4	4	20	80	100	**35**
	UBCAT104	**Programming Tools & Techniques**	4	4	20	80	100	**35**
Elective Course (EC-I)	UBCAT105.1 UBCAT105.2	**Elective** 1. **Digital Electronics** 2. **Linear Electronics**	4	4	20	80	100	**35**
Core III Lab (based on Core I and Core II)	UBCAP106	**Lab on UBCAT103**	4 Prac. Per Batch	2	20	30	50	**20**
	UBCAP107	**Lab on UBCAT104**	4 Prac. Per Batch	2	20	30	50	**20**
EC based Lab	UBCAP108	**Lab on UBCAT105.1 or UBCAT105.2**	4 Prac. Per Batch	2	20	30	50	**20**
Total				**26**	**160**	**490**	**650**	**235**

Note: Student must appearfor University Practical Examination.

Note :Direction and scheme of course is available in the website of Gondwana University, Gadchiroli(www.gondwana.digitaluniversity.ac)

BCA I (Semester II)

Subject	Paper Code	Paper Name	Total Period/ Week	Credit	% of Assessment			
					IA	UE	Total	Min. Passing (35%)
Ability Enhancement Compulsory Course (AECC-III and AECC-IV)	**UBCAT201**	**English (Business Communication –II)**	4	4	20	80	100	**35**
	UBCAT202.1 **UBCAT202.2** **UBCAT202.3**	**Elective** 1. **Supplementary English** 2. **Marathi** 3. **Hindi**	4	4	20	80	100	**35**
Core Courses (Core IV and Core V)	**UBCAT203**	**Fundamental of 'C'**	4	4	20	80	100	**35**
	UBCAT204	**Operating System and Linux**	4	4	20	80	100	**35**
Elective Course (EC-II)	**UBCAT205.1** **UBCAT205.2**	**Elective** 1. **Database Management System** 2. Management Information System	4	4	20	80	100	**35**
Core VI Lab (based on Core IV and Core V)	**UBCAP206**	**Lab on UBCAT203**	4 Prac. Per Batch	2	20	30	50	**20**
	UBCAP207	**Lab on UBCAT204**	4 Prac. Per Batch	2	20	30	50	**20**
EC based Lab	**UBCAP208**	**Lab on UBCAT205.1 or UBCAT205.2**	4 Prac. Per Batch	2	20	30	50	**20**
Total				**26**	**160**	**490**	**650**	**235**

Pattern of Question Paper

General Rules and Regulations regarding pattern of question paper for the semester end examination is as given below:

1. There will be four units in each paper.
2. Maximum marks of each theory paper will be 80.
3. Question paper will consist of five questions, each of 16 marks.
4. Four questions will be based on four units with internal choice.
5. Fifth question will be compulsory with questions from each of the four units having equal weightage and there will be no internal choice.

Bachelor of Computer Application

BCA – [I / II / III]	Semester – [I / II/ III / IV / V / VI]
Paper Code:	**Paper: Name of Paper**

Time: 3 Hours]   [Max. Marks: 80

Note:1) All questions are compulsory and carry equal marks.
2) Draw Neat and Labeled diagram and use supporting data wherever necessary.
3) Avoid vague answers and write specific points/answer related to questions.

Q1 Either (From Unit 1)	
a)	8
b)	8
Or	
c)	8
d)	8
Q2 Either (From Unit 2)	
a)	8
b)	8
Or	
c)	8
d)	8
Q3 Either (From Unit 3)	
a)	8
b)	8
Or	
c)	8
d)	8
Q4 Either (From Unit 4)	
a)	8
b)	8
Or	
c)	8
d)	8
Q5 Solveall questions	
a)(From Unit 1)	4
b) (From Unit 2)	4
c)(From Unit 3)	4
d) (From Unit 4)	4

B.C.A. - I

(SEMESTER – I)

Paper –I: ENGLISH(Business Communication-I)

[Max. Marks: 80

Syllabus will remain same as that Compulsory English Paper of B.Sc. –I (SEMESTER –I)

B.C.A. - I (SEMESTER – I)
ELECTIVE Paper –II : SUPPLEMENTARY ENGLISH

[Max. Marks: 80

Syllabus will remain same as that Supplementary English Paper of B.Sc. –I (SEMESTER –I)

Syllabus will remain same as that MarathiPaper of
B.Sc. –I (SEMESTER –I)

B.C.A. - I (SEMESTER – I)
ELECTIVE Paper –II :HINDI

[Max. Marks: 80

Syllabus will remain same as that HindiPaper of
B.Sc. –I (SEMESTER –I)

Paper –III: INFORMATION AND COMMUNICATION TECHNOLOGY

[Max. Marks: 80

UNIT-I: Introduction to IT and Computers

Block Diagram of Computer, Functioning of Computer, Generations of Computer, Characteristics, Advantages & Limitations of Computer.

Computer Memory: Primary & Secondary, Types of Primary Memory.

Number System: Decimal, Binary, Octal, Hexadecimal number systems, features and conversions, ASCII codes

UNIT-II: I/O and Storage Device

Input Devices: Keyboard **Locator Device:** Mouse, Joy Stick, Digitizing Tablet

Pick Device: Light Pen, Touch Screen Track ball **Voice Recognition:** Microphone, **Scanning:** MICR, OCR, OMR, Barcode Reader. **Vision Capturing:** Webcam, Digital Camera, Touch Pad,

Output Devices: VDU, Dot Matrix, Laser and Inkjet Printers, Projector.

Storage Device: Hard Disk, Optical Disk, Blu Ray Disk and Pen Drive.

UNIT-III: Windows

Operating System, Classification of Operating System on the basis of task (Single User Single Task, Single User Multiple Task, and Multi-User Multiple Task), Features of Windows, GUI, Operating with Windows, Desktop, Taskbar, and Windows Explorer.

Control Panel: Administrative Tools - Data Source, Date and Time, Display, Device Manger, Mouse, Programs and Features, User Accounts. Recycle Bin

Windows Accessories: Calculator, Notepad, Paint, System Information, Disk Defragmentation, Disk Cleanup

UNIT–IV: Network & Internet

Computer Communication, Need for Networks, Communication Device, Types of Network-LAN, WAN, MAN, Concept of Network Topology, Types of Topologies and its Advantages and Limitations, OSI Model.

Internet: Basic Internet terms, Internet Addressing, Services provided by Internet, Detail about E-mail, Search Engine, Basic of Intranet, Social and Ethical Issues, E-learning.

Open Source Terminologies: Open Source Software, Freeware, Shareware, Proprietary Software.

Books:
1) Dr.S.B.Kishor," Information & Communication Technology", Das Ganu Publication, ISBN: 978-93-81660-73-7
2) Aksoy, "Introduction to Information Technology", Cengage, ISBN: 9788131505915
3) Dr.Madhulika Jain, Shashank&Satish Jain ,"Information technology Concepts", BPB Publication, New Delhi, ISBN-- 8176562769

References:
1) Rao, "Information Technology for Real World Problem", Universities Press, ISBN- 978-81-7371-734-5
2) KamleshAgarwal", WAP the NET", MacMillan Publication.
3) Verma,"Computer, Internet & Multimedia – Dictionary", Universities Press

B.C.A. - I (SEMESTER – I)

Paper –IV: PROGRAMMING TOOLS & TECHNIQUES

[Max. Marks: 80

UNIT – I: Language Evolution

Machine Language, Assembly Language, High Level Language. **Translators:** Compiler, Interpreter and Assembler, Linker, Loader, Study of Programming Language (Procedure Oriented, Object-Base, Event-Base), Study of HLL, Characteristics of Good Language, Generation of Languages.

UNIT – II: Programming Construction Tools

Problem Analysis, Process Analysis, Conceptual Development of Solution. Development Tools: **Algorithm:** Types of Algorithm, Algorithm of Analysis, Advantage and Disadvantage of Algorithm, Complexity of Algorithm, Big-O Notation **Flowcharts:** Concept, Symbols, Rules of flowcharting, Advantage and Disadvantage of Flowchart. **Pseudo Code**: Definition and Its Characteristics

UNIT – III: Control Statements

Basics of Programming Language: Use of Character Set, Meaning of Keywords and Identifiers, Role of Data Types, Constants and Variables. Importance of Casting, Different Types of Operators and their Precedence, Expressions, Conditional Statements (One-Way, Two-Way and Multi-Way Conditional), Looping Statements (for, while, do-while), Usage of break, continue, goto and exit Statement.

UNIT – IV: Arrays

Arrays: Arrays, One dimensional array, Various Operation on Array (Inserting of Element, Deleting of Element, Rotating List, Sorting, Searching, Merging Etc) and Two dimensional arrays (Matrix Addition, Transpose of Matrix, Matrix Multiplication), Modular programming and its features.

Books:

1) Anil V. Chouduri, "The Art of Programming through Flowchart and Algorithms", Laxmi Pub. ISBN-8170087791
2) R.G. Dromey, "How to Solve it by Computer", Pearson, ISBN 978-81-317-0562-9
3) S.B. Kishor, "Programming Logic and Techniques", BlackSwan (University Press), ISBN 978 81 7371 822 9
4) Koren, "Computer Arithmetic Algorithm", Universities Press, ISBN- 9788173715334

References:

1) Donald Knuth, "The Art of Computer Programming Vol-I, II III", Pearson.
2) Horowitz, Sahani, "Fundamental of Computer Algorithm", Ori

B.C.A. - I (SEMESTER – I)

Paper –V: DIGITAL ELECTRONICS

[Max. Marks: 80

UNIT – I: Number System and Data Representation
Number System: Binary, Octal, Decimal and Hexadecimal Number System and their Inter Conversion.
Binary Codes:BCD, Excess3, Parity, Gray, ASCII, EBCDIC Codes and their Advantages and Disadvantages.
Data Representation: Positive,Negative, Maximum and Minimum Number Representation (Related to 8 bit Number), Real Number Representation, Underflow, Overflow, Range and Accuracy.

UNIT – II:Binary Arithmetic& Logic Gates
Binary Arithmetic: Binary Addition, Decimal Subtraction Using 9's and 10's Complement Binary Subtraction Using 1's and 2's Complement Multiplication and Division.
Logic Gates: Truth Table, Properties and Symbolic Representation of NOT, AND, OR, NOR, NAND, EX-OR, EX-NOR Gates. NOR and NAND Gates as Universal Gates.

UNIT – III: Boolean Algebra and Combinational Circuits
Boolean Algebra:Laws and Identities of Boolean Algebra, Demorgan's Theorem, Use of Boolean Algebra for Simplification of Logic Expression, K-Map for 2,3,4 Variables, Simplification of SOP and POS Logic Expression Using K-Map.
Combinational Circuits: Half Adder, Full Adder, Parallel Adder, Half Subtractor, Full Subtractor, 4-Bit Binary Adder Subtractor, Multiplexer, Demultiplexer, Decoder, Encoder, Parity Detector.

UNIT – IV: Sequential Circuits and Counters
Sequential Circuits: Flip-Flops Construction and Working of RSFF, JKRSFF, DFF, TFF, JKFF and JKMSFF.
Counters: Construction and Working of Asynchronous, Synchronous, Up-Down Counter, Shift Registers and Their Types, Ring Counter, Johnson Counter with their Time Diagram.

Books:
1) Gothman, "Digital Electronics", PHI.
2) Navaneeth, Kale and Gokhale, "Digital and Analog Technique", ISBN-81-225-0153-2

References:
1) SoumitraMandal, "Digital Electronics", TMH, ISBN 0-07015382-5
2) B Ram, "Fundamental of Microprocessor and Microcomputer", DhanpatRai Pub.
3) Liu. Gibson , "Microcomputer System" The 8086/8088 Family, ISBN-1-55623-874-6

B.C.A. - I (SEMESTER – I)

Paper –V: LINEAR ELECTRONICS

[Max. Marks: 80

UNIT – I : Network Theorems
Ohms Law, Kirchhoff's law, Thevenin's, Norton's, Superposition Maximum power transfer theorem (statement, proof and examples based on each theorem for DC sources only).

UNIT – II : Semiconductors
Material, Classification on the basis of band theory, intrinsic and extrinsic semiconductors, PN junction, forward and reverse biased characteristics of PN junctions, Diode as half wave, full wave bridge rectifier, Zener diode and its use as voltage regulator (load and line regulation).

UNIT – III: Bipolar Junction Transistor
Construction and working of PNP and NPN transistor, CE, CC, CB configuration, biasing of transistor (potential divider method only), load line concept for AC and DC (operating point and stability), classification of amplifier (general ideas only), Switching action of transistor, construction and working principal of JEET and MOSFETS.

UNIT – IV: Amplifiers
Importance of GBW product, DC coupled amplifier(general ideas only), construction and working of difference amplifier, its advantages, CMRR, Ad, Ac, input bias current, input offset current, input and output impendence of difference amplifier, block diagram of OPAMP, virtual ground concept, Ideal characteristic of OPAMP as inverting, non inverting, adder, subtractor and differentiator, integrator, comparator and Schmitt trigger.

Books:

1.Basic Electronics by B.L. Thereja S. Chand Publication. ISBN-81-81-219-2555-X
2.Microprocessor and Interfacing by Douglas Hall.
3.Inside the IBM PC by Peter Norton

References:

1.IBM PC/XT Hardware: Reference Manual.
2.Microprocessor Systems: The 8086/8088 Family Architecture, Programming and Design by Liu and Gibson

B.C.A. - I (SEMESTER – I)

Practical based on IT, Office Automation

A)   Information Technology

1. Study of various input devices with troubleshooting.
2. Study of various output devices.
3. Study of booting process.
4. To study assembling and de assembling the PC.
5.   To study and installation of antivirus software
6. Procedure to clean up Disk, Disk fragmentation

7. Tostudyandinstallationofantivirussoftware
8. Proceduretocleanup Disk, Diskfragmentation

B) LibreOffice Writer/Ms-Word

1.   a) Type the Content Heading and then set the Index option using Tab setting. Finally take a print out.

CONTENTS

Chapter   Page No.

[Chapter names at 1" with left alignment while Page number at 4.5" with right alignment and with leader …..]

b) Draw a Block diagram of computer system using auto-shapes, and name them using textbox and join each parts using line-style. At the end give the page border to it. Finally take a print out.

c) Type the following set of equation. Finally take a printout.

1. $B^2 - 4AC = 0$
2. H_2SO_4
3. If ($A^2 \geq 0$)

4. $f(x) = \sum_{i=1}^{i=5} 5 * X^i$

5. $k^2 - 4 = 0$, if $b_0 \neq 0$
6. $e^{i\theta} + e^{-i\theta} = 2\cos\theta$

2.   Type the following letter and take printout

                                                                                ABC
                                                                                SAI Nagar
                                                                                Mumbai
                                                                                ☎020-1111111

        Dear Sir,

                Kindly provide the **rate** of following <u>set of peripherals,</u>

        ➢ Computer 🖥 with following configuration
            - Intel© Pentium© Processor T4400 (2.2GHz, 1MB L2 Cache,
              800 MHz FSB)
            - 250 GB HDD, DVD RW, 35.56cms (14) CSV LED Backlit, 1GB
              DDR3 RAM
        ➢ Floppy disk 🖫 of 1.44 MB of 12 Box
                • Sony
                • Verbatin
        ➢ 3-Button mouse 🖱 of following 5 each
                a)   i-ball
                b)   Logitech

        Thanking you,
        Date : < Insert System Date >   Your
                                                                XYZ

3.   Type the following

┌─────────────────────────────────┐
│ ┌─────────────────────────────┐ │
│ │   │ │
│ │   **LibreOffice**   │ │
│ │   │ │
│ │   1. Word   │ │
│ │   2. Excel   │ │
│ │   3. Power Point   │ │
│ │   4. <u>Access</u>   │ │
│ │   │ │
│ └─────────────────────────────┘ │
└─────────────────────────────────┘
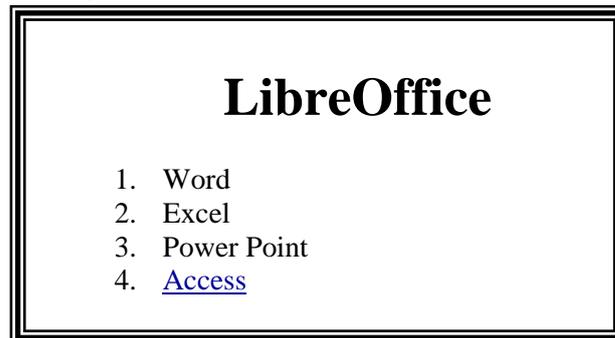
a) **Ms-Word:** MS-Word is the application software and one of the most powerful word processor in Windows operating system. It is used for formatting of letters or the text. In simple meaning it is a word processor having various functions for text you may insert different objects like pictures, sound and video or calendar in word file.
b) **Ms-Excel:** Ms-Excel is a powerful spreadsheet or worksheet application that can use for managing, analyzing and presenting data in tabular format. It also helps to display data in graphical format using charts.
c) **Ms-Power Point**: Ms-Powerpoint is a powerful tool to create professional looking presentation and slide shows.
d) **Ms-Access**: Ms-Access is a powerful program to create and manage database.
Perform the following operation,

     i. When user presses on Access it should jump to Access Paragraph within page.
    ii. Similarly create a hyperlink for other option within a page.
   iii.Print it.

4.   Define and write the characteristic of computer and perform following operation,

a. Divide the text in two columns
    b. Insert the picture of computer in the background in each column.
    c. Insert header with your name
    d. In footer write name of your college
    e. Give proper heading for phrase.
    f. Use Drop Cap for 1st letter of each paragraph
    g. Define line spacing 1.5 with left margin 1.25" and right margin 0.75"
    h. Font : Courier New, Font size for heading 14 and for normal text 11
    i. Finally take a print out.
5.   Type the following letter exactly as given below,
    Before start of typing, set up page in the following format

    1) Page Size : A4 with Landscape Orientation
    2) Left Margin: 2" Right Margin: 1" Top Margin: 0.5"

Computer Stream after 12th

- **Science Stream**
    - **B.Sc. (Computer Science)**
    - **B.Sc. (IT)**
    - **BCA**
    - **B.E. (Computer Science)**
    - **B.E. (Information Technology)**
- **Commerce Stream**
    - **BCCA**
    - **B.Com (Information Technology)**

COMPUTER

[If Computer Picture is not loaded on your computer then simply select one of the pictures loaded in clip-art]

6.   Write a letter to publisher for supplying the list of books along with book details. For ex.
    To,
    Publisher,
    Das GanuPrakasan,
    Nagpur.
R/Sir,
    Supply following title of books at the earliest.

Sr.No.	Title	Author	No. of Copies
1	Information System	S.Kishor	10
2	Information Technology	S. Kishor	15
3	Principle of Business Management	S. Kishor	12
4	Financial Accounting	Dr.KishorMohrir	13

Thanking you,

Date: < Insert System Date >

<div align="right">Yours</div>

<div align="center">Principal
(Dr. WWW)</div>

Perform Following option

1) Take a printout

2) Assume Liberian forget to enter one of the entry of book so, kindly add it between number 3 and 4 say,

        4   Business Economics GurbirKaurKhalsa   10

3) Replace author name S. Kishor by S.B. Kishor at once.

4) Finally print the copy of this document with following settings,

- Left Margin   = 1.75"
- Right Margin   = 1"
- Top Margin   = 1.5"
- Bottom Margin = 1"

7. Using Mail-Merge write a letter to all selected candidate for their final admission on specific date say (30-June) at XYZ Institute, with necessary documents at 10 AM.
   Name should be highlighted while course and date of commencing class should be underlined

8. Create a document and while saving give a security to open the saved document.
   Take a screen shot while opening it.

9. Draw the following shape using rectangle option found in Drawing Toolbar

And generate following types of box by copying and formatting above box
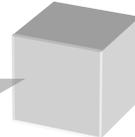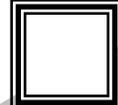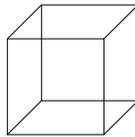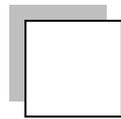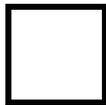
C) LibreOfficeCalc/MS-Excel

1) Prepare following table in a worksheet using MS-Excel.

Name	Basic	DA	HRA	Gross Pay	PF	Net Pay
Rahul	10000					
Sachin	20000					
Nilesh	15000					
Bharti	25000					

Perform following operations:-

1. Complete the table using formulas
   - DA = Basic * 27 %
   - Hra = Basic * 10 %
   - PF = Basic * 12.5 %
   - Gross Pay = Basic + DA + HRA
   - Net Pay = Gross Pay – PF

2. Give the Proper Heading.
3. Take the printout in landscape orientation

2) Enter following data in MS-Excel worksheet.

Name	Date of joining	Salary	Designation
Rahul	Jan-05	10000	Peon
Sachin	Oct-10	20000	Accountant
Nilesh	Jan-05	15000	Clerk
Bharti	Dec-09	25000	Manager

Perform following operations:-
1. Copy the above data and place in sheet2 and sort the table in the ascending order or date of joining and give proper heading.
2. Copy the above data and place in sheet3 and sort the table in the ascending order or date of joining followed by order of name and give proper heading.
3. Copy all the above data to sheet4 and take printout

3) Prepare following using MS-Excel.

Players	Match 1	Match 2	Match 3	Average	Highest Score	Sum
Sehwag	78	43	91			
Sachin	45	77	62			
Yuvraj	65	80	37			
Dhoni	34	15	46			
Raina	23	75	55			

Perform following:-
a. Calculate Average and High score of each player using AVERAGE & MAX function
b. Calculate total score of each match using SUM function.
c. Sort above records in descending order on the basis of average.
d. Take the printout in landscape orientation
4) Prepare the Mark sheet of IT subject on the basic of 3 Unit test. Each of 30 Marks and perform following,
1. Calculate total marks, Average and Grade
2. Auto format to the above table.
3. Take the printout
5) Prepare the multiplication using
1) Relative cell reference
2) Absolute cell reference.

Multiplicand	Multiplier	Product using Relative	Product using Absolute
13	1		
	2		
	3		
	:		
	:		
	10		

6) Create profit and prepare a column chart in MS-EXCEL using the data.

Month	Net Sales	Actual Cost	Profit

|			
Jan. 10	22000	18000	
Feb. 10	245005	9555	
Mar. 10	32450	24850	

Perform following operations:-
      a. Find the profit
      b. Give a chart title "Profit Report"
      c. Take the printout.

7) Draw Pie chart of following excel sheet.

Bowler	Over	Maiden	Runs	Wickets
Zaheer	10	2	22	3
Ishant	10	1	36	2
Harbhajan	10	0	48	2
Mishra	10	0	37	3
Yuvraj	10	0	43	0
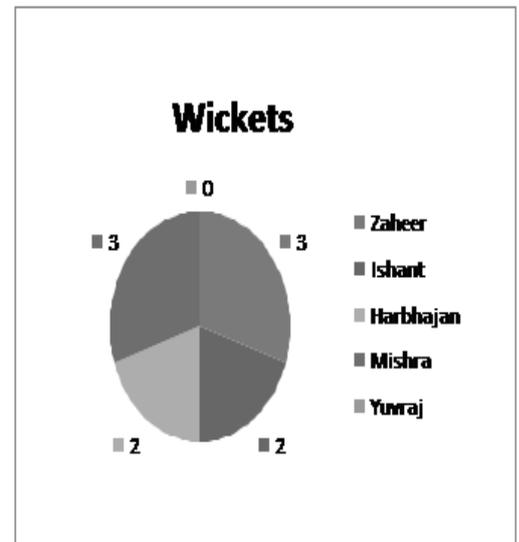
D) LibreOffice Impress/Ms-Powerpoint

1. Prepare the following slides with the information given below:
- Select the slide of your choice and write about yourself.
- Write about your family members name with relation.
  Tip: By using Title and 2 column text
- Using Title Content and text slide insert the picture of your favourite hero with the list of their movies.
- Finally run the slide continuously until Esc key is not pressed.

  At last, write the steps that you have perform.

2. Create the following slide.

    1. Change the bullet style in the first and the second level.
    2. Change the case of the first level text to upper case and second level text to lower case.(By using Change Case option)
    3. Change the attribute of the text to: Font : Arial, Font Style : Italics, Size:20
    4. Justify the text.

3. Select the 10 slides of your choice. Apply the following settings and write the steps you have perform in each options.

- o Insert page number in each slide
- o Timer should be displayed during execution.
- o Change the background color of each slide.
- o Set the interval time for each slide to be displayed.
- o Use Flash bulb animation in your presentation.
- o Select a Color Schemes of your choice.
- o Insert Chart in one of your slide.
  Insert a table in your presentation

B.C.A. - I (SEMESTER – I)
Practical based on UBCAT104

[Max. Marks: 50

Minimum 5 case studies to be perform under the guidance of faculty member

[Max. Marks: 50

Practical list of DIGITAL ELECTRONICS

1) To Study and Design the characteristics of basic gates (AND, OR, NOT).

2) To Study and Design the characteristics of Universal gates (NAND, NOR).

3) To Study and Design the Derived gates (EX-OR, EX-NOR)

4) To Study and Design the basic gates (AND, OR, NOT) using Universal NAND gate.

5) To Study and Design the basic gates (AND, OR, NOT) using Universal NOR gate.

6) To Study and Design the basic gates (EX-OR, EX-NOR) using Universal NAND gate.

7) To Study and Design the derived gates (EX-OR, EX-NOR) using Universal NOR gate.

8) To Study and Design NOR gate using NAND gate.

9) To Study and Design NAND gate using NOR gate.

10) To Study and Design RS FLIP FLOP using NAND gate.

11) To Study and Design RS FLIP FLOP using NOR gate.

12) To Study and Design JK FLIP FLOP.

13) To Study and Design JKMS FLIP FLOP.

14) To Study and Design the Half-adder.

15) To Study and Design the Full-adder.

16) To Study and Design the Half subtractor.

[Max. Marks: 50

1) To study and verify the Thevenin's theorem.

2) To study and verify the Maximum power transfer theorem.

3) To verify the ohms law

4) To study the V-I characteristics of P-N junction semiconductor diode as forward bias & Reverse bias

5) To study the Zener diode as a voltage regulator.

6) To study the Half wave and Full wave rectifier.

7) To study the input/output characteristics of CE mode transistor (NPN /PNP)

8) To study the input/output characteristics of CB mode transistor NPN /PNP)

9) To study the characteristics of JFET (Junction Field Effect Transistor)

10) To study the op-amp as an adder and subtractor.

11) To study the op-amp as an integrator and differentiator.

12) To study the op-amp as an Inverting and non inverting amplifier.

B.C.A. - I

(SEMESTER – II)

Paper –I: ENGLISH(Business Communication-II)

[Max. Marks: 80

Syllabus will remain same as that Compulsory English Paper of B.Sc. –I (SEMESTER –II)

[Max. Marks: 80

Syllabus will remain same asthat Supplementary English Paper of B.Sc. –I (SEMESTER –II)

ELECTIVE – II
Paper –II :MARATHI

[Max. Marks: 80

Syllabus will remain same asthat MarathiPaper of
B.Sc. –I (SEMESTER –II)

B.C.A. - I (SEMESTER – II)
ELECTIVE III
Paper – II :HINDI

[Max. Marks: 80

**Syllabus will remain same as that HindiPaper of
B.Sc. –I (SEMESTER –II)**

[Max. Marks: 80

UNIT– I:Basic Programming Elements

History of 'C', Application of 'C', C language as Middle Level, C Character Set, Tokens, Keywords, Data Types, Identifiers, Types of Constants, Variables, Type Declaration Instruction, Type Casting.

Operators and Expressions – Arithmetic, Relational, Logical, Assignment, Increment and Decrement Operator, Updating Assignment, Conditional Operator, Hierarchy of Operators, Mathematical Functions in 'C'.Basic Structure of 'C' Program.

UNIT – II:I/O Statements &Conditional Statement
Input and Output statements in C
Unformatted Function
   a) Single Character I/O funtions: getch, getche, getchar/fgetchar, putch, putchar/fputchar
   b) String I/O funtions: gets, puts
Formatted Function: scanf (), printf (),Backslash Character, Role of Field Width in printf Statement.
Conditional Statement: if statement, if-else statement, Nested if statement, else-if ladder, switch statement, Ternary Operator

UNIT – III:Looping Statements and Jumping Constructs
Looping Statement: Need of Looping Statement, for Loop, Comma operator, while statement, do- while statement, validating INPUT using do- while statement, Infinite loops, Nested Loop.
Jump Constructs: break statement, use of break, continue, goto statements and exit ().

UNIT- IV: Arrays
Need of Array, Array Definition, One Dimensional Array, Declaration and Initiation of one dimension array, Bounce Checking, Sorting (Bubble, Sequential), Searching (Linear, Binary), Merging, Two Dimensional Array, Addition and Multiplication of Two Dimensional Arrays.
Character and String Handling.

Books:
   1) E. Balagurusamy , " Programming in ANSI C",TMH,5th Ed., ISBN 0-07-068182-1
   2) Dr. S.B. Kishor, "PROGRAMMING IN C", Das GanuPrakashan, ISBN9789384336219

References:
   1) K.R.Venugopal and S.R.Prasad, "Mastering C", 3rd Reprint, ISBN 0-07-061667-1
   2) S.Shrivastav, " C In Depth", 1st Ed., ISBN 81-7656-107-X

Paper – IV:OPERATING SYSTEM AND Linux

[Max. Marks: 80

UNIT – I : Introduction to Operating System

Operating System: Introduction, Purpose, Function and Role of Operating System.
Types of OS: Concepts of Batch, Multi Programmed, Time Sharing, Parallel, Real Time
Computer System Structure: Computer System Operation, I/O Interrupt, Storage Structure and Storage Hierarchy.
Hardware Protection: Dual Mode Operation, I/O Memory and CPU Protection

UNIT – II : Operating System Structure
System Components: Process, Main Memory, File I/O System, Secondary Storage Management, Networking, Protection System, Command Interpreter System, System Call.
Process and Job Control: Process and Types of Process, Process State, Operation on Process, File Manipulation Device Management, Information Maintenance and Communication.

UNIT – III : Linux
Structure of Linux Operating System, Exploring the directory structure, Naming Files and Directories
Shell: Bourne, Korn and C-Shells
File System Commands: ls, mkdir, rmdir, cd, cat, mv, cp, rm, ln, pwd, more
Text editing with vi editor

UNIT – IV : Shell Scripts
Pipe and Filters: sort, grep, egrep **Permission Modes:** chmod, chown, chgrp
Process: ps, kill, **Communication**
Shell Scripts: Variables, Arithmetic in Shell Script, Control flow statements, Shell Parameters

Text Books

1) Andrew S. Tanenbaum, "Modern Operating Systems", PHI.
2) Jack Tackett, Jr. and Steven Burnett, "Using Linux", PHI (5th Ed)
3) Dr. S. B. Kishor, "Operating System", Das Ganu Prakashan, ISBN : 978-93-81660-11-9

References

1) Brain Proffitt, "Red Hat Linux 7", PHI.
2) "Teach Linux in 24 hours", SAMS Techmedia, ISBN:81-7635-499-6
3) Grant Taylor, "Linux Complete" , BPB pub., ISBN : 81-7656-170-3

ELECTIVE - I
Paper –V: DATABASE MANAGEMENT SYSTEM With MS-ACCESS

[Max. Marks: 80

UNIT I :- Introduction to DBMS
Database Environment, Traditional File Processing System and DBMS Environment, Relationship, Classification of DBMS Users, DBMS Facilities, Advantages and Disadvantages of a DBMS, The Three-Level Architecture Proposal for DBMS, Mapping, Rules Database Administrator (DBA), Data Independence, Data Association.

UNIT II: - Data Models & Normalization
Data Model: Classification, Approaches to the Relational Model, Hierarchical Model and Network Model with an Example, Entity-Relationship Model.
Normalization, Normal forms, Functional Dependency, 1NF (First Normal Form), 2NF (Second Normal Form), 3NF (Third Normal Form), Relational Algebra, Codd"s.

UNIT:–III:- Working With MS-Access: Elements of an Access database - Tables, Queries, Forms, Reports and Macros. Introduction to MS-Access, Designing Database, Crating Database using Wizard, Working with Table. **Field Types** - Auto number, Date/Time, Number, Text, Yes/No, Hyperlink. Creating Tables using Design View and using wizard, Editing Table, Editing Records.

UNIT:–IV:- Query and Form Designing Query: Filtering Data, Studying different types of Queries, Specifying Criteria in Queries, Filter using multiple criteria. **Forms, Report and Macro:** Procedure to create a Form, Reports and Macros.

Books:
1) Philip J. Pratt, "Database Management System", Cengage Learning, ISBN- 81-315-0969-9

2) Panneerselvem, "Database Management Systems", PHI, ISBN- 81-203-2028X.

3) Silberschatz, Korth, Sudarshan "Database System Concepts ",BPB, ISBN- 0-07-120413-X.

4) Caleste Robinson, " Access 97", BPP, 1998, ISBN : 81-7029-928-4

References:
1) Dr. S. B. Kishor, "Database Management Syatem& MS-Access", Das Ganu, ISBN : 978-93-81660-92-8

2) C.J.Date, A. Kannan, S.Swamynathan,"An Introduction to Database Systems ",8th Edition, Pearson ISBN- 978-81-7758-556-8.

3) Sanjay Saxena, "MS-OFFICE- 2007 in a Nutshell",Vikas Publishing, ISBN- 978-81-259-5036-3.

4) Bipin C. Desai,"An Introduction to Database Systems",Galgotia .

ELECTIVE- II

Paper –V: MANAGEMENT INFORMATION SYSTEM

[Max. Marks: 80

UNIT -1 : SYSTEM CONCEPT

System Concept, definition, System approach, characteristics, System Elements - Input, Output. Environment Boundary Interface, feedback, Control. Types of Systems, Business system. Data vs information, information and decision making, Value of information, quality of information. Introduction to MIS, definition, need, objectives, benefits, functions, characteristics, Structure of MIS, information requirements at various levels of Management Activities.MIS vs data processing. Types of MIS: IPS, OAS, DSS, Expert system (organization, features & advantages) Functional MIS for marketing, finance, human resource, production & service industry.

UNIT -2: SDLC& DFD

System Development Life Cycle (SDLC) concept & stages.Need, determining user's information requirements- Information gathering - Sources & Methods (Interviews, questionnaires, observation, document analysis). System analysis, planning approach-elements, objectives, constraints, feasibility study, Tools of data recording, DFDs, data dictionary, decision tree, decision table, cost benefit analysis.

UNIT-3: INPUT/OUTPUT FORM DESIGN

Output/ input design, form design, process design, process specification, file design, program design, module integration, storage requirement .selection of hardware and software, software controls, system flow chart, user view of processing, modeling input output data. Procedure design, design documentation, user feedback, Project planning & control.

UNIT-4 :TESTING AND IMPLEMENTATION

Testing: Code testing, specification testing, types of tests, verification and validation systems security and privacy, control measures, disaster recovery plan, system audit, Documentation: user's System. Operations manual, Role and qualities of system analyst as a change agent implementation - Methods of change over, transition and conversion, change management, user training. Post implementation maintenance & review.

Books
1. Elias Award, "System Analysis & Design", Golgotha Publication, 2nd Edition,
2. Edward," System Analysis & Design ", Tata McGraw Hill.
3. Rajaraman," Analysis and Design of Information System", PHI Publication, ISBN – 8120312270
4. S.B. Kishor, "MIS and System Analysis", Das Ganu, ISBN : 978-93-81660-09-6
Reference Books:

1. Kendall & Kendall, "System Analysis & Design ",PHI Publication, 5th Edition,ISBN-8120321553
2. Dennis, "System Analysis & Design", Wiley Student Publication,3rd Ed. ISBN-9788126508808

B.C.A. - I (SEMESTER – II)
Practical based on UBCAT203

[Max. Marks: 50

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1) A program to find simple and compound interest for the rate of interest.
2) A program to find corresponding temperature in Fahrenheit from a given temperature in Celsius.
3) A program to swap the contents of two variables.
4) A Program to accept the distance between two cities in Kilometer and print the distance in meter, feet, inches and centimeter.
5) A Program to accept the two sides and angle included by these two sides to find area and third side of a Triangle.
6) A Program to check a number is even or odd using conditional operator.
7) A program for testing leap year.
8) A program to find roots of Quadratic equation ax^2+bx+c.
9) A Program to check a number is palindrome or not.
10) A Program to generate a menu driven program using switch statement.
    1) Add
    2) Edit.
    3) Delete.
    4) Exit.
11) A Program to print multiplication Table of a number.
12) A program to print number, square and cube of the first 10 natural number.
13) A program to find the factorial of an integer number.
14) A program to generate and print Fibonacci sequences.
15) A program to print first 5 lines of the following pyramid.

```
    1
    1   2
    1   2   3
    1   2   3   4
    1   2   3   4   5
```

15) A program to find the GCD of two Positive integers by successive division.

16) A Program to find the number of Armstrong number between 123 to 425

17) A program to print all the prime number between 10 to 100

18) A Program to generate a menu driven program using switch statement.
    1) Add
    2) Edit.
    3) Delete.
    4) Exit.

19) A Program to find sum of two matrices having size m*n and p*q.
20) A Program to find multiplication of two Matrices having size m*n
21)A Program to Transport the matrix of size M*N.
22) A Program to delete an element from the list
23) A Program to add element K at Pth Position in the list of N elements

Note: Practical should be performed either using Open Source Software 'C' or by using Turbo 'C'.

B.C.A. - I (SEMESTER – II)
Practical : based on UBCAT204

[Max. Marks: 50

Minimum 5 case studies need to be perform under the guidance of faculty member

B.C.A. - I (SEMESTER – II)
EC - ELECTIVE– I
(based on UBCAT205.1)

[Max. Marks: 50

Create table Student (Student_no, Student_name, and Course) in MS-ACCESS with the following details and perform following operations.

Student_no	Student_name	Course
101	Sunil	Vb
102	Anshu	Vb.Net
103	Sonam	Tally
104	Shital	Vb.Net

1. Use Column width as best fit.
2. Set Student no as a Primary Key.
3. Insert at least 10 students" records.
4. Display all the students whose name begin with letter „S".
5. Display the query view and take out the print out.
6. Add new fields such as Fees, Date_adm ,Date_of_birth, .Address)
7. Add data to above newly fields.
8. Select Student name, Course and Fees from student table.
9. Delete all the students who were admitted on specific date.
10. Update fees to increase it by thrice.
11. Select all the students of VB.NET paying course fees of 4000.
12. Update table by replacing the course name to TALLY wherever the course fees is 3500.
13. Delete the record where Student name is SONAM.
14. Display the student name, student no who was born on „14/6/1996"
15. Replace the Address of student say, ANSHU to PUNE.
16. Remove all the records where number of students is less than 2 for particular course.

B]   Create the Tables in which
    Stud_per_Detail(Stud_no, Stud_name, Sex, date_of_birth, Address, Ph_no) and
    Stud_off_detail(Stud_no,Course,Fees,date_Adm).
1. Select Stud_Name, Address from Stud_Per_Detail and Stud_no, Course, Fees from Stud_off_datail.
2. Create a report view for above query.
3. Append the records of above tables Stud_Per_Detail to Stud_History where Student Date_of_Birth i s 14/06/1996.
4. Print the table design view and datasheet view.

C]   Create a table Donar(Donar_no, Donar_name, BG, Sex) by using following instruction.
1. Use Columnar Layout.
2. Use Blueprint style.
3. Give the title for Form as Donar Details Form.
4. Enter 5 records.
5. Print the Form view.

B.C.A. - I (SEMESTER – II)
EC - ELECTIVE – II
(based on UBCAT205.2**)**

[Max. Marks: 50

Minimum 5 case studies need to be perform under the guidance of faculty member