

GOVT. BILASA GIRLS' P.G. (Auto.) COLLEGE

Link Road, Bilaspur (C.G.)

Phone No. : 07752-224249, Website : www.bilasagrilscollege.ac.in



SYLLABUS

B.C.A.
Semester - III & IV

2021-22



Rules and Regulations for the Semester System at the Graduation Level

1. These subjects are compulsory for all students:-
 - (a) Environmental Studies (I Semester)
 - (b) English Language (II and III Semester)
 - (c) Hindi Language (IV and V Semester)
 - (d) Skill Based Course (VI Semester)
2. In each semester there will be only one theory paper in each elective Subject.
3. For Honours Degree Course, there will be one additional theory paper in each semester i.e. semesters, III to VI.
For Honours Degree Course, separate practical classes will be held round the year but the examinations shall be held only in even semesters i.e. semesters II, IV and VI.
4. **Marks Pattern:-**
 - (i) For non practical subjects, each theory paper will be of 100 marks i.e. 80 External + 20 Internal.
 - (ii) For practical subjects, each theory paper will be of 75 marks i.e. 60 External + 15 Internal.
 - (iii) Practical examination will be of 50 marks. Practical Classes will be held round the year but examination shall be held only in even semesters i.e. semesters II, IV and VI.
5. **Theory Examination:-**
Duration for theory examination shall be of two and half hours.
6. **Practical Examination:-**
Duration for Practical examination shall be as suggested in the syllabi.
7. **Admission Period:-**
 - (i) Admissions in the First Semester shall be completed before 15th of July every year.
 - (ii) Admissions in Semesters i.e. II, III, IV, V and VI shall be completed within 7 days after the completion of examinations on the provisional basis.
 - (iii) The provisional admission shall be regularized within 7 days from the date of declaration of result.
 - (iv) Request for permission for late admission shall not be entertained.
8. **Schedule of Classes-**
 - (i) I Semester's classes will be commenced from 16th of July every year
 - (ii) III and V Semester's classes will be commenced from 2nd July every year.
 - (iii) II, IV and VI Semester's classes will be commenced from 2nd January every year.
 - (iv) All the classes shall be continued till seven days prior to the commencement of the examination.
9. **Examination Schedule- Tentative Schedules of examinations are as under-**
 - (i) Odd semester (I, III & V) - 20th November to 20th December.
 - (ii) Even semester (II, IV & VI) - 15th April to 14th May.
10. **Examination Pattern -**
 - (a) Questions will be asked Unit wise and Section wise. Questions will be set from all Units Covering the entire syllabi.
 - (b) For non practical subjects, maximum marks will be 80 (External).
 - (c) For the practical based subjects, maximum marks will be 60 (External).
 - (d) In each theory paper there will be three sections and the marks distributed for different sections will be in the following pattern -

Theory (Non- Practical):- There will be three sections A, B and C in the question paper.
Section - A Objective Type/ In few words (30 words)

There will be 15 questions to be set, three from each unit and 10 to be attempted. Each question will carry 2 marks.

Section - B Short Answer Type (60 words)

There will be 5 questions to be set, 1 from each unit and all five questions to be attempted. Each question will carry 6 marks.

Section - C Long Answer / Eassy Type Question

There will be 5 questions to be set, 1 from each unit and 2 to be attempted. Each question will carry 15 marks.

Marks Scheme for - Non-practical subject -

Types of Questions	Question to be set from each Unit	Total No. of Questions	Questions to be solved	Marks assigned	Total Marks
Objective / In few words	03	15	10	02	20
Short Answer Type Questions	01	05	05	06	30
Long / Essay type of questions	01	05	02	15	30
					Total - 80

(i) **Theory (Practical Subject):-** There will be three sections A, B and C in the question paper.

Section - A Objective Type/ In few words (30 words)

There will be 15 questions to be set, three from each unit and 10 to be attempted. Each question will carry 2 marks.

Section - B Short Answer Type (60 words)

There will be 5 questions to be set, 1 from each unit and all five questions to be attempted. Each question will carry 4 marks.

Section - C Long Answer / Eassy Type Question

There will be 5 questions to be set, 1 from each unit and 2 to be attempted. Each question will carry 10 marks.

Marks Scheme for - Practical Subject -

Types of Questions	Question to be set from each Unit	Total No. of Questions	Questions to be solved	Marks assigned	Total Marks
Objective / In few words	03	15	10	02	20
Short Answer Type Questions	01	05	05	04	20
Long / Essay type of questions	01	05	02	10	20
					Total - 60

For question papers of compulsory papers of General group subjects i.e. Environmental Studies, English Language, Hindi Language and Skill Based Course, the pattern of question shall be applicable as suggested by the concerned Board of Studies.

(ii) **Practical**

	<i>Each Practical</i>
Laboratory Note Book / Project	10
Vive voce	10
Lab work / Field work	30
Total - 50	

- (e) In odd semester examination, a candidate shall appear in papers of odd semester(s) only. Similarly in even semester examinations, a candidate shall appear in papers of even semester(s) only. Papers of odd and even semesters shall not be confined in one examination.
- (f) Minimum passing marks for external/ semester end theory and practical shall be 34%.

- (g) There shall be provision of 3 grace marks and it would be distributed in maximum two theory Papers / Practical.

Internal Assessment

- Internal Tests are compulsory for theory papers and must be held as per following calendar:-

Odd Semesters 1st Test - August, 2nd Test - October and 01 Assignment (during semester)

Even Semesters 1st Test - February, 2nd Test - March and 01 Assignment (during semester)

- Each test & Assignment will be of 20 marks for the subjects without practical & 15 marks for the subjects having practicals. Average of the marks obtained in the best of two tests & assignment shall be incorporated as the final marks. Qualifying marks is 40%.
- If a candidate failed to attend the test on bonafide grounds, one special test may be arranged on the production of relevant documents, before submission of application forms and fees to the office.
- The Unit tests/Assignment marks to be sent to the examination cell of the college as per notification to be issued by the Principal/ Controller Examination from time to time.
- If a candidate (whose status is Regular / Ex/Supplementary) failed in First Year of the current session (2013-14) of annual system will be appeared in the first semester examination as ex-student with under the rules and regulations of Semester System. Number of Internal Test of passed year (2013-14) will not be incorporated or carried forward.

	Non Practical Subject		Practical Subject	
	External	Internal	External	Internal
MAX MARKS	80	20	60	15
MIN MARKS	28	08	21	06

Eligibility criteria for appearing in the examinations

- A candidate should have 75% of attendance both in theory and practical classes. 65% attendance may be considered only on special circumstances and on certification by the Principal of the college.
- A candidate shall have to qualify in the internal tests securing at least 40% marks.
- A candidate shall be allowed to appear in those papers only in which she has secured qualifying marks in internal test.
- If a candidate after taking admission in 1st semester could not continue the classes or could not obtain eligibility cannot appear in the 1st semester examinations. In such cases the student will not be allowed to continue in second semester and she has to continue the classes and obtain eligibility in 1st semester again in next academic year as ex-student.

11. Lecture Periods /Classes

There shall be a minimum of 50-60 hours Classes for each theory papers in respective course. Minimum of 50-60 hours shall be for each practical paper. This shall be strictly adhered to.

12. Other Guidelines

- There will be no provision for Revaluation, Supplementary or Betterment (Division Improvement).
- A candidate has to clear all the papers within 12 semesters (six years) from the year of first admission in the programme.
- A candidate will choose Honours subject just before the start of third semester from any one of the three elective subjects /group selected by her in the first semester. A candidate can change the Honours subject within 15 days from the date of admission in the third semester.
- The system of credit of ten point scale examination marks in the final mark sheet shall be introduced only after its formal approval by the competent authorities.

- (v) The system of Choice based credit system and Gradation system shall be introduced only after its formal approval by the competent authorities.

For Honours Degree Course (Total Marks: 2800).

13. Admission -

The process of admission in Honours Degree Course will be as follows -

- (i) Student shall select course (Pass Course / Honours Degree Course) at the time of first admission in the college.
- (ii) Admission shall be on merit basis after receiving the application from students.
- (iii) Number of seats for Honours Degree Course will be decided as per the Govt. Rules.

(A) Each theory Paper (Non Practical Subject)

<i>Each Theory Paper</i>		<i>Internal Assessment</i>	
Full Marks	Minimum Passing 34%	Full Marks	Minimum Marks 40%
80	28	20	08

(B) Each theory Paper (Practical Subject)

<i>Each Theory Paper</i>		<i>Internal Assessment</i>	
Full Marks	Minimum Passing 34%	Full Marks	Minimum Marks 40%
60	21	15	06

(C) Each Practical Paper

<i>Minimum Passing Percentage</i>	<i>Full Marks</i>	<i>Minimum Passing Marks</i>
34%	50	17

(D) Grace Marks

Total/Maximum 03 in two theory paper/practical.

Amendments in Promotion Rules for Semester System at the Graduation Level

- (a) A Candidate is eligible to continue the second semester classes immediately after the 1st Semester examinations and can appear in the 2nd semester examinations notwithstanding the number of arrear papers in 1st semester provided she must have appeared in the 1st semester examination.
- (b) A candidate will be promoted to 3rd semester with not more than two papers of 1st semester and she will continue to attend classes of 3rd semester provisionally. She will be allowed to get final admission in the 3rd semester with maximum of four back papers in all 1st semester and 2nd semester.
- (c) A Candidate is eligible to continue the 4th semester classes immediately after 3rd semester examination and can appear in the 4th semester examination with maximum 2 back papers in 1st semester and/or any numbers of back papers in 2nd and 3rd semester.
- (d) A candidate will be promoted in 5th semester with not more than 2 back papers in 3rd semester and not more than 4 back papers in all 3rd and 4th semester provided she has cleared 1st and 2nd semester examination.
- (e) A candidate is eligible to continue the 6th semester immediately after the 5th semester examination and can appear in 6th semester examination with maximum of 2 back papers in 3rd semester and/or any number of back papers in 4th and 5th semester examination.
- (f) If a Candidate of 6th Semester is passed in all the semesters except the 5th Semester with back in only one subject, she is allowed to appear in the back paper of the 5th Semester with the examination of 6th Semester.

- (g) The students at the UG Level can view their valued answer copies and apply for the **Challenged Valuation** within 03 days from the date of the declaration of the result.
- (h) A candidate will be eligible to get Graduation and Graduation Honours degree after passing all the six semester examination. For clearing all semester papers a candidate will be given a period 6 years (12 semesters) from the year of first admission.

सेमेस्टर स्नातक स्तर प्रमोशन नियम

प्रथम सेमेस्टर में प्रवेश की पात्रता:-

- प्रथम सेमेस्टर में छात्राओं का प्रवेश छ.ग. शासन के प्रवेश नियम के आधार पर किया जायेगा।

द्वितीय सेमेस्टर में प्रवेश की पात्रता:-

- विद्यार्थी को प्रथम सेमेस्टर की परीक्षा के तत्काल बाद कितने भी विषयों में बैक के साथ द्वितीय सेमेस्टर में अध्ययन की पात्रता होगी, बशर्ते वह प्रथम सेमेस्टर की परीक्षा में शामिल हुआ हो।

तृतीय सेमेस्टर में प्रवेश की पात्रता:-

- प्रथम सेमेस्टर में 02 से अधिक विषयों में बैक नहीं होना चाहिए।
- प्रथम एवं द्वितीय सेमेस्टर में सम्मिलित रूप से 04 विषयों से अधिक में बैक न हो।

चतुर्थ सेमेस्टर में प्रवेश की पात्रता:-

- प्रथम सेमेस्टर में 02 से अधिक विषयों में बैक नहीं होना चाहिए।
- द्वितीय एवं तृतीय सेमेस्टर में कितने भी विषयों में बैक हो।

पंचम सेमेस्टर में प्रवेश की पात्रता:-

- प्रथम सेमेस्टर उत्तीर्ण होना चाहिए।
- द्वितीय सेमेस्टर उत्तीर्ण होना चाहिए।
- तृतीय सेमेस्टर में 02 से अधिक विषयों में बैक न हो।
- तृतीय एवं चतुर्थ सेमेस्टर में सम्मिलित रूप से 04 विषयों से अधिक में बैक न हो।

षष्ठम् सेमेस्टर में प्रवेश की पात्रता:-

- प्रथम सेमेस्टर उत्तीर्ण होना चाहिए।
- द्वितीय सेमेस्टर उत्तीर्ण होना चाहिए।
- तृतीय सेमेस्टर में 02 से अधिक विषयों में बैक न हो।
- चतुर्थ एवं पंचम सेमेस्टर में कितने भी विषयों में बैक हो।
- यदि कोई छात्रा सभी सेमेस्टर में उत्तीर्ण है एवं केवल पंचम सेमेस्टर में 01 (एक) विषय में बैक है, ऐसी छात्रा को षष्ठम् सेमेस्टर की परीक्षा के साथ परीक्षा देने का अवसर दिया जावेगा।
- विशेष -
 - ✓ मूल्यांकित उत्तर-पुस्तिकाओं के अवलोकन व Challenged Valuation की प्रक्रिया इस स्नातक स्तर सेमेस्टर परीक्षा अप्रैल-मई से लागू है। छात्राएं परीक्षा परिणाम घोषित होने की तिथि से 3 दिन के भीतर इस हेतु आवेदन प्राचार्य को दे सकती हैं।
 - ✓ विद्यार्थी को स्नातक एवं स्नातक आर्नस की उपाधि तभी प्राप्त होगी जबकि उसने सभी 06 सेमेस्टर की परीक्षाएँ उत्तीर्ण कर ली हों एवं 06 सेमेस्टर की परीक्षाएँ उत्तीर्ण करने हेतु उसे प्रथम प्रवेश की तिथि से लेकर 06 वर्षों की अवधि प्राप्त होगी।
 - ✓ छात्रा जिस सत्र बैक की परीक्षा में सम्मिलित होगी उसी सत्र का पाठ्यक्रम एवं परीक्षा संबंधी नियम लागू होगा।

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GOVT. BILASA GIRLS' P.G. (AUTO.) COLLEGE
BILASPUR (C.G)
FOUNDATION COURSE
ENGLISH LANGUAGE
SYLLABUS 2021-2022
CLASS: B.A./B.SC/B.COM/B.SC.(H.Sc.)/BCA/BBA

Max. M - 80
Min. M - 29

SEMESTER- III

UNIT-ITEN QUESTIONS TO BE SET (one from each chapter) AND FIVE TO BE ATTEMPTED

LESSONS

5 X 4 = 20

1. Dandi Salt March – Louis Fischer
2. Aspects of Indian Constitution – M.C. Chagla
3. Individual Freedom – Jawaharlal Nehru
4. Fundamental Duties
5. Delhi in 1857 – MirzaGhalib
6. Raja's Diamond – R.L Stevenson
7. Tree – Tina Morris

UNIT-II COMPREHENSION- Unseen Passage

10

UNIT-III PRECIS WRITING

10

UNIT-IV ESSAY WRITING

Four to be set and one to be attempted

10

UNIT-V A. GRAMMAR (25 to be set and 20 to be attempted).

20

- Articles
- Prepositions
- Gerunds
- Self Forms & Possessives
- Narration (Direct & Indirect)
- Voice (Active & Passive)

B. VOCABULARY (from the text) 15 to be set 10 to be attempted. 10

Synonyms, Antonyms, Match the Column, combined the sentences

BOOK: ENGLISH LANGUAGE AND INDIAN CULTURE – MADHYA PRADESH
HINDI GRANTH ACADEMY.

R. Michael
24.8.21

[Signature]
24.8.21

[Signature]
24.8.2021

B.C.A. – Semester III
Computer Application
[Paper: I – Digital Electronics and Microprocessor]

Max. Marks: 80

Min. Marks: 28

Hours 45; Credit-3

Unit – I: Background of Digital Electronics

Digital Signals, Different Type of Numbering System: Decimal, Octal, Binary, Hexadecimal, Conversion from One Number System to Another System, Binary Addition, Binary Subtraction, Binary Complements. One's & Two's Complement, Binary Subtraction Using Two's Complement.

Unit – II: Logic Families

Logic Gate Basics: Or gate AND Gate, NOT Gate, Exclusive-OR (XOR) Gate, Truth Tables for Logic Gates, Truth Tables for Combinational Logic.
Types of Logic Family: Circuit of RTL, DTL, TTL and Working Function as a Gate, Emitter Coupled Logic (ECL) CMOS Logic Family, NMOS and PMOS Logic, Comparison of Different Logic Families.

Unit – III: Boolean Algebra and Karnaugh Maps

Boolean Algebra, Boolean Expression Of Combinational Logic, Laws of Boolean Algebra, Rule a of Boolean Algebra: NOT Rule, OR Rules, AND Rules, XOR Rules, Derivation of other rules Simplification, Demorgan's Theorem, Boolean Expression Formats: Sum-Of- Product, Product-Of-Sum, Converting SOP & POS to Truth Table & Truth Table to Expression, Karnaugh Maps.

Unit – IV: Combinational and Sequential Circuit

Decoders, Multiplexers, De-Multiplexers, State Machine Design Process: Mealy Versus Moore State Machines, S-R Latch/ Flip-Flop, D Latch, J-K Flip-Flop, Divide-By-Two Circuit, Registers, Counter Ripple (Asynchronous) Counter and Synchronous Counter, UP/DOWN Counters,

Unit – V: Microprocessor

Generic Architecture of Microprocessor, Pin Diagram & Pin Function of Intel 8085 Microprocessor, Instructions Set for Microprocessor, Definition and need of Addressing Mode, Addressing Modes of Intel 8085 & 8086 Microprocessor, Machine Cycle and Instruction Cycle of Microprocessor, Working of Microprocessor.

Text book:

1. Modern Digital Electronics, R. P. Jain, TMH
2. Digital Principles & Application, Leach & Malvino, TMH
3. Digital Logic Design, Morries Mano, PHI
5. Microprocessor – Architecture, Programming and Applications with the 8085, Ramesh S. Gaonkar

Reference Books:

1. Digital Integrated Electronics, H. taub & D. Shilling, McGraw Hill
2. Digital Principles & Design, Givone, TMH
3. Digital Circiut & Design, S. Aligahanan, S. Aribazhangan, Bikas Publishing House.
4. Fundamental of Digital Electronics & Microprocessor, Anokh Singh, A. K. Chhabra, S. Chand

Handwritten signatures and initials at the bottom of the page, including "uhk", "Sharma", "Megha", and "S. K. Singh".

3

B.C.A. – Semester III
Computer Application
[Paper: II – Computer Networks]

Max. Marks: 80

Min. Marks: 28

Hours 45; Credit-3

Unit – I: Introduction to Computer Network

Computer Network Fundamental and types of Computer Network LAN, MAN, WAN, Wireless and Wired Network Broadcast and Point to Point Network, Network Topologies, ISO-OSI Reference Model, TCP/IP Model.

Unit – II: Data Link Layer

Functions at Data Link Layer, Framing and Correction Codes: Checksum, CRC, Hamming Code, Flow Control: Stop & Wait and Sliding Window Protocols, Data Link Protocols: HDLC and PPP, Medium Access Sub-Layer, LLC Protocol, IEEE Overview of IEEE 802.2, 802.3, 802.5 802.6.

Unit – III: Network Layer and Transport Layer

Functions of Network Layer, Routing Protocols & Algorithms, Principles of Congestion Control, Ipv4 Address, Ipv4 Addressing, Ipv6 Address, Internetworking Basics, Functions of Transport Layer, Flow Control & Buffering, Introduction To TCP/UDP Protocols and their Comparison.

Unit – IV: Common Network Architecture

Connection Oriented & Connectionless N/Ws, Frame Relay, Example of N/Ws-P2p, X.25, ATM Ethernet, Wireless LANS – 802.11, 802.11x, Gigabit, Broad Band Networks: Integrated Service Digital Networks (ISDN), Broad Band ISDN, ATM, Very Small Aperture Terminal(VSAT).

Unit – V: Internet and Protocols

World Wide Web (WWW), Domain Name System (DNS), E-Mail, File Transfer Protocol (FTP), Hyper Text Transfer Protocol (HTTP), E-Mail Protocols: Mime & SMTP, POP, IMAP, Telnet – Remote Communication Protocol, Proxy Server, Proxy Web Servers: Internet Class Full Addressing, Working Of Internet Applications.

Text books:

1. Computer Networks, Andrew S. Tanenbaum, PHI / Pearson Education Inc.
2. Data communication and Networking, Behrouz A. Forouzan, Tata McGraw-Hill.
3. Internet Law-Text and Materials, chris Reed, universal law Publishing co., new delhi

Reference book:

1. Data and computer communication, William Stallings, Pearson Education.
2. Computer and communication networks, Nader F. Mir, Pearson Education, 2007.
3. Data & computer communication, black, PHI.

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Shruti (High) for. TCC

Max. Marks: 80

Min. Marks: 28

Hours 45; Credit-3

Unit-I : Introduction and Array

Data Types, Data Structure and its Classification, Arrays: Array concept (one dimension, two dimension), Operations for one dimension array (insertion, deletion, traversal), Examples.

Unit-II : Linked Lists

Concept of a linked list, Circular & Doubly linked list, Operations on linked lists, List Manipulation with Pointers, Insertion & Deletion of elements, Applications of linked lists.

Unit-III : Stacks-Queues and Binary Tree

Definitions and Structure, Representation using Array & Linked List, Application of Stack and Queues, Postfix and Prefix Conversion, Evolution of Arithmetic Expressions, Binary Trees: Definition, Memory Representation, Trees traversal algorithms (recursive and non-recursive), threaded trees, BFS, DFS.

Unit-IV : Searching and Sorting

Linear and Binary Search Algorithms, Complexity, Binary Search Trees (construction, insertion, deletion & search), Sorting Algorithms: Bubble Sort, Insertion Sort, Selection Sort, Tree sort, Heap Sort, Quick Sort, Merge Sort & Radix sort, External Sorting.

Unit-V : Analysis of Algorithm

Time and Space Complexity of Algorithms, Average Case & Worst Case Analysis, Asymptotic Notation, Big O notations, Analysis of sorting algorithms -Selection sort, Bubble sort, Insertion sort, Heap sort, Quick sort and Analysis of searching algorithms -Linear Search & Binary Search.

Text Book:

1. Data Structures using C, A. M. Tenenbaum, Langsam, Moshe J. Augentem, PHI Pub.
2. Data Structures using C by A. K. Sharma, Pearson Education
3. Data Structures and Algorithms, A.V. Aho, J.E Hopcroft and T.D. Ullman, Addison- Wesley, Low Priced Edition.
4. Fundamentals of Data structures, Ellis Horowitz & Sartaj Sahni, AW Pub.
5. Fundamentals of computer algorithms, Horowitz Sahni and Rajasekaran, Pearson Edu.
6. Data Structures and Program Design in C, Robert Kruse, PHI of Data Structures, Jr. Seymour Lipschetz, Schaum's outline by TMH.

uh ✓ *Smart* *(Neglas)* *1/5*

fu

सामान्य हिन्दी
चतुर्थ सत्र (सेमेस्टर)
सत्र : 2021-22
अनिवार्य प्रश्न पत्र
बी.ए./बी.एस-सी./बी.कॉम./बी.एच.एस-सी.

अंक योजना पूर्णांक : 100
मुख्य परीक्षा : 80
आंतरिक मूल्यांकन : 20

- इकाई - 1
1. पल्लवन, पारिभाषिक शब्दावली ।
 2. भारत वंदना (कविता)
- इकाई - 2
1. पत्र लेखन (निजी पत्र, व्यावहारिक पत्र, शासकीय पत्र, अर्द्ध शासकीय पत्र, आवेदन पत्र ।)
 2. शिकागो से स्वामी विवेकानंद का पत्र ।
- इकाई - 3
- पर्यायवाची, युग्म शब्द, शब्द शुद्धि, उपसर्ग, प्रत्यय, तत्सम, तद्भव शब्द, मुहावरे-लोकोक्ति ।
- इकाई - 4
- देवनागरी लिपि, नामकरण, वैज्ञानिकता एवं विशेषताएं, कम्प्यूटर में हिन्दी का अनुप्रयोग, मानक हिन्दी स्वरूप, विशेषताएं और प्रकार ।
- इकाई - 5
1. हिन्दी अपठित, संक्षेपण ।
 2. ईदगाह (कहानी) प्रेमचंद ।

:: सहायक पुस्तकें ::

1. भारतीयता के अमर स्वर - डॉ. धनंजय वर्मा
 2. प्रयोजनमूलक हिन्दी - विनोद गोदरे
 3. कम्प्यूटर भाषिक अनुप्रयोग - विजय कुमार मल्होत्रा
 4. हिन्दी संक्षिप्तलेखन - रामप्रसाद किचलू
 5. हिन्दी शब्द सामर्थ्य - शिवनारायण चतुर्वेदी
 6. हिन्दी व्याकरण एवं रचना - डॉ. प्रभा व्यौहार
- म.प्र. हिन्दी ग्रंथ अकादमी

Ashutosh
2020-21

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2021/10

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B.C.A. – Semester IV
Computer Application
[Paper: I – Object Oriented Programming Using C++]

Max. Marks: 80

Min. Marks: 28

Hours 45; Credit-3

Unit-I

Features of C++, OOP vs. procedure-oriented programming, OOP Concepts: Abstraction, Inheritance, Polymorphism, Data Binding, Encapsulation, Classes, subclasses and Objects; Basics of C++: Data Types and sizes, Variable, Constants and its types, Use of « and » operators, Operators and Expressions: Operators:-Arithmetic, Relational, Assignment, Logical, Increment and Decrement Operators (++ and --), Operate-Assign' Operators, Expressions, Operator Precedence, Precedence and Order of Evaluation, Conditional Expression, Casting and type conversion.

Unit- II

Program Flow & Decision Control: if, if - else, if - else if, Loop Control: while, do - while, for, break, continue; Case Control: switch, goto; Functions/Procedures, Returning values from functions, Arguments Passed by Value Passing Addresses of Arguments, Pointers and Arrays: Pointer Initialization, Pointer Operators, Pointer Arithmetic Functions and pointers, Arrays, Initializing Arrays, Passing Arrays to Functions, Pointers and Arrays, Pointer to an Array, Array of pointers, Strings: String I/O, Arrays of Strings, Structures, Arrays of Structures.

Unit-III

Binding Data & Functions: Defining a Class, Creating an Object, Scope, Data Abstraction, Data Encapsulation 'this' Pointer, Dynamic Creation of Objects, Constructors and Destructors: Parameterized & Copy constructor Member Functions & Methods, Friend Class and Friendly Functions, Returning Objects, Arrays of Objects.

Unit-IV

Function and Operator Overloading, Rules for Overloading, Operator overloading and its uses: Overloading unary and binary operators, Overloading the Assignment Operator, Overloading the « Operator, Overloading the Increment & Decrement Operator, Converting data types: Basic to class type, Class to Basic Type, Class to Another Class Type.

Unit-V

Reusing Classes: Inheritance-Base and Derived classes, Inheritance types, Scope Resolution Operator, Access Modifiers, Multiple & Multilevel Inheritance, Calling Base Class Constructor, Overriding Base Class Member Virtual functions and Polymorphism: Virtual & non-virtual Overriding, Rules for Virtual Functions, Pure Virtual Functions, Static and Dynamic Binding, Virtual Base Classes, Templates, Exception Handling, Throwing an exception.

Text books:

1. C++, The Complete Reference, 4th Edition, Herbert Schildt, TMH.
2. Object Oriented Programming in C++, 4th Edition, R.Lafore, SAMS, Pearson Education

Reference Books:

1. An Introduction to OOP, 3rd Edition, T. Budd, Pearson Education, 2008.
2. Programming Principles and Practice Using C++, B.Stroutstrup, Addison- Wesley, Pearson Education.
3. Problem solving with C++, 6th Edition, Walter Savitch, Pearson Education, 2007.
4. The Art, Philosophy and Science of OOP with C++, R.Miller, SPD. OP in C++, 3rd Edition, T.Gaddis, J.Walters and G.Muganda, Wiley DreamTech Press.
5. An Introduction to OOP in C++ with applications in Computer Graphics, 2nd Edition, G.M.Seed, Springer.
6. Programming with ANSI C++, B.Trivedi, Oxford Press.

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B.C.A. – Semester IV
Computer Application
[Paper : II – Computer Graphics and Multimedia]

Max. Marks: 80

Min. Marks: 28

Hours 45; Credit-3

Unit-I: An Introduction Graphics System

Computer Graphics Fundamentals, Application of Computer Graphics, Video Display Devices. Raster & Random Scan Systems, Input Devices, Graphics Software, Interactive devices, Output Primitives, Line Drawing & Circle Generating Algorithms, Scan-Line Polygon Fill Algorithm, Inside-Outside tests, Boundary-Fill Algorithm, Flood Fill Algorithm.

Unit-II: 2D Transformations

2-D Viewing and Clipping: Viewing Transformations, Point Clipping & Line Clipping Algorithms, Polygon Clipping algorithms, 2D Geometric Transformations: Basic transformations (Translation, Rotation, Scaling), Matrix Representation & Homogeneous Coordinates, Composite transformations, Reflection and Shear.

Unit-III: 3D transformations

3D Viewing Transformation, Projections: Parallel Projection (Orthographic & Oblique Projections, Isometric Projections), Perspective Projections, 3D Geometric Transformations: Translation, Rotation, Scaling, Matrix Representation, 3D Object Representations: Polygon Surface and Polygon table, Bezier curves and surfaces.

Unit-IV: Multimedia and Photoshop s/w

Fundamentals of Multimedia, Adobe Photoshop CS4: Menus and panels, Exploring the Toolbox, Working with Images: Working with Multiple Images, Rulers, Guides & Grids, Image Size Command, Adjusting Canvas Size & Canvas Rotation, Creating, Selecting, Linking & Deleting Layers, Painting with Selections, Red Eye Tool, Clone Stamp Tool, Color creation, Quick Mask Options, Creating Straight & Curved Paths, Creating Special Effects.

Unit-V: CorelDraw X4

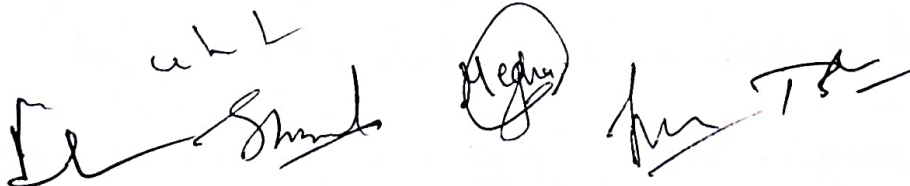
CorelDraw X4 Command Bars & Tools, Drawing Area-Objects-Lines, Working with Text & Artistic Media Tool, Fills & Modifying Outlines, Drop Shadows, Importing and Editing OCR Text, Templates, Drawing and Editing Curves and Lines, Three-point Tools, Clipart, Special Characters and Creating Symbols, Working with Layers & Creating a Master Layer, Brush Tools and Adding Objects, Interactive Tools, Power Clip Feature and the Envelope Tool.

Text Books:

1. Procedural Elements for Computer Graphics, D.F. Rogers, Tata McGraw Hill
2. Fundamentals of Interactive Computer Graphics, J.D. Foley and A.D. Van, Addison- Wesley.
3. How to Do Everything Adobe Photoshop CS4, Chad Perkins, Tata McGraw Hil
4. Corel Draw X4: The Official Guide, (Paperback), Gary David Bouton, Tata McGraw Hill

Reference Books:

1. Mathematical Elements for Computer Graphics,, Rogers and Adam, Tata McGraw Hill.
2. Theory & Problem of Computer Graphics, Plastock, Schaum Series.
3. Computer Graphics, Tosijasu, L.K., Springer-verleg
4. Principles of Interactive Computer Graphics, Newman, Tata McGraw Hill.

u k L
The bottom of the page contains several handwritten signatures and initials. On the left, there is a signature that appears to be 'De Shinde' with 'u k L' written above it. In the center, there is a circular stamp or signature that says 'Megha'. On the right, there is another signature that looks like 'Anurag'.

8

B.C.A. – Semester IV
Computer Application
[Paper: III – Computer Organization and Architecture]

Max. Marks: 80

Min. Marks: 28

Hours 45; Credit

Unit-I : Pipeline:

Linear: pipeline processor, Non linear pipeline processor, Instruction pipeline design, Mechanisms, Dynamic instruction scheduling, Arithmetic pipeline design, Super-scalar processors, VLIW architecture.

Unit-II: Memory Hierarchy and I/O Organization On:

Cache memories, Cache coherence, High bandwidth memories, high bandwidth I/O, Disk I/O, Bus specifications and standards.

Unit-III : Parallel Computer Models & Program parallelism:

Classification of Machines, SISD, SIMD & MIMD, Condition of parallelism, data and resource dependencies, Program partitioning & scheduling, grain size latency, control flow versus data control, data architecture.

Unit-IV : Synchronous Parallel Processing:

Vector instruction types, vector access memory schemes, vector and symbolic processors, SIMD architecture, SIMD parallel algorithms, SIMD computers and performance enhancements.

Unit-V : System Interconnection:

Network properties and routing, static interconnection networks, dynamic interconnection networks, Multiprocessor system interconnection, Multistage & combining networks.

Text Books

1. Flynn Computer Architecture: Pipelined and parallel processor design, JB, Boston.
2. Computer Architecture & Parallel processing - Kai Hwang 7 Briggs. (MGH).
3. Computer System Architecture, M. Morris Mano, PHI/Pearson Education.
4. Computer Organization, C Hamacher, Z Vranesic, SafwatZaky, McGraw Hill.
5. Computer Architecture and Organization, J. P. Hayes, Tata McGraw-Hill.

Reference Books:

1. Parallel Computer Arch.& Algo, R.W. Hockney, C.R. Jesshope, Adam Hilger.
2. Structured Computer Organization, A. S. Tanenbaum, Pearson Education.
3. Fundamentals of Computer Organization, P. Dandamudi , Springer.

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9

B.C.A. – Semester IV
Computer Application
[LAB: III – Programming Lab Using C++]

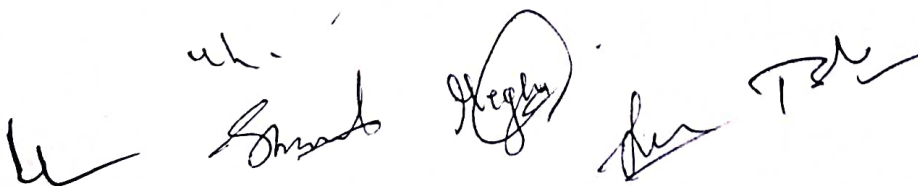
Max. Marks: 50

Min. Marks: 17

List of Sample Problems/Experiments:

1. Write a C++ program to find the sum of individual digits of a positive integer.
2. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence.
3. Write a C++ program to generate the first n terms of the sequence.
4. Write a C++ program to generate all the prime numbers between 1 and n , where n is a value supplied by the user.
5. Write C++ programs that use both recursive and non-recursive functions
 - a) To find the factorial of a given integer,
 - b) To find the GCD of two given integers,
 - c) To find the nth Fibonacci number.
6. Write a C++ program that uses a recursive function for solving Towers of Hanoi problem.
7. Write a C++ program to find both the largest and smallest number in a list of integers.
8. Write a C++ program to implement the matrix ADT using a class. The operations supported by this ADT are:
 - a) Reading a matrix,
 - b) Printing a matrix,
 - c) Addition of matrices
 - d) Subtraction of matrices.
 - e) Multiplication of matrices.

9. Write a program to demonstrate concept of method overloading.
10. Write a program to demonstrate concept of method overriding.
11. Write a program to demonstrate concept of inheritance.
12. Write a program to demonstrate concept of operator overloading.
13. Write a program to demonstrate concept of virtual and pure virtual function.
14. Write a program to demonstrate concept of polymorphism.
15. Write a program to demonstrate concept of friend function and friend class.

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Max. Marks: 50

Min. Marks: 17

Series of Practical Curriculums

Photoshop:

1. (i) Handling different file formats and interchanging them, changing the resolution, color, grayscales and size of the images
- (ii) Using, brushes and creating multicolor real life images. Cropping, rotating, overlapping, superimposing, pasting photos on a page, Creation of a single image from selected portions of man. Developing a commercial brochure with background tints, Creating an image with multi-layers images and texts. Applying masks and filtering on images.

CorelDRAW X4 Part 1

- Getting Started with CorelDRAW
- Starting CorelDRAW
- Working with Command Bars
- Working with Layers
- Examining a Master Page
- Creating a Master Layer
- Working with Layers
- Using Brush Tools and Adding Objects
- Working with Interactive Tools
- Using Advanced Techniques for Text Manipulation
- Working with Paragraph Text
- The PowerClip Feature and the Envelope Tool
- Creating Bulleted Lists
- Working with Vector and Bitmap Graphics
- Converting Vector Objects to Bitmaps
- Working with Bitmap Graphics
- Introduction to CorelTRACE
- Advanced Output Options
- Preparing a Document For Printing
- Other Printing Options

