

**ORDINANCES
AND OUTLINES OF TESTS,
SYLLABI AND COURSES OF READING**

FOR

BACHELOR OF COMPUTER APPLICATIONS (B.C.A)

(SEMESTER SYSTEM)

PART-I

(Semester Ist and IInd)

FOR

2010-11, 2011-12, 2012-13 SESSIONS

**PUNJABI UNIVERSITY,
PATIALA – 147 002**

ORDINANCES
(FOR B.C.A. UNDER THE +3 SCHEME)
Applicability of Ordinances for the time being in force

Notwithstanding the integrated nature of a course spread over more than one academic year, the ordinances in force at the time a student joins a course shall hold good only for the examination held during or at the end of the academic year. Nothing in these Ordinances shall be deemed to debar the University from amending the ordinances subsequently and the amended ordinances, if any, shall apply to student whether old or new.

1. The course for the Degree of B.C. A. (Bachelor of Computer Applications) shall be spread over Three academic years to be called Semester I, II, III, IV, V and VI. The examination for the I, III and V semesters shall be held in the month of November/December and for the II, IV and VI semesters in the month of May/June or on such other dates as may be fixed by the Academic Council.
2. The outlines of tests and syllabi shall be such as prescribed by the Academic Council from time to time.
3. The candidates will be required to pay examination fees as prescribed by the University from time to time.
4. Application for admission to the examination shall be made on the prescribed form countersigned by the authorities as mentioned in the relevant ordinances. The last date by which admission forms and fees must reach the Registrar shall be as follows:

Annual Examination	Without late fee	With late fee of Rs. 100/-	With late fee of Rs. 300/-	With late fee of Rs. 500/-	With late fee of Rs. 1000/-
I, III and V semester Regular and Re-appear Candidates	Sept. 30	Oct. 15	Oct. 31	Up to 21 days before the commencement of the examination (written or practical whichever is earlier)	Up to ten days before the commencement of the examination (Written or practical whichever is earlier) with the approval of the Vice-Chancellor
II, IV and VI semester Regular and Re-appear Candidates	Feb. 28	Mar. 15	Mar. 31	-do-	-do-

5. The medium of instructions and examination shall be English only.
6. In each course 20% of the total marks are assigned to the internal assessment and 80% marks in the University.
7. (a) The minimum number of marks required to pass the examination shall be 35% in each paper by obtaining minimum 35% of the marks in the Internal assessment and 35% of the marks in the University examination separately for each paper.
 (b) When a candidate has failed or placed under re-appear in the University examination, but passes in internal assessment, the marks in the continuous assessment shall be carried for subsequent examinations.
8. (a) A candidate who fails not in more than two papers may be declared 're-appear' in those papers at a subsequent examination within two chances and may be permitted to re-appear in those papers.

The examination of the reappear papers of odd semester will be held with regular examination of the odd semester and reappear examination of even semester will be held with regular examination of even semester. But if a candidate is placed under reappear in the last semester of the course, he will be provided chance to pass the reappear with the examination of the next semester, provided his reappear of lower semester does not go beyond next semester.

- (b) If a candidate fails in more than two papers, he/she will be declared 'fail'. If such candidate has taken provisional admission to next semester before the declaration of result of the previous semester, his/her admission shall be cancelled immediately on declaration of the result of previous semester. He/She will have to clear the examination for the very semester as a private candidate along with the regular students of that semester.

9. **A Candidate shall be allowed to join:**

(i) **First Semester:**

Provided that he/she has passed at least, one academic year previously, the +2 examination of Punjab School Education Board, or any other examination recognised as equivalent thereto.

(ii) **Second Semester:**

Provided that he/she has undergone a regular course of studies of first semester as provided under the regulations and fulfils the conditions as laid in ordinance 7 and 8 above.

(iii) **Third Semester:**

Provided that he/she has undergone a regular course of studies of First and Second semesters as provided under the regulations in sequential order and fulfils the conditions as laid in ordinance 7 and 8 above.

(iv) **Fourth Semester:**

Provided that he/she has undergone a regular course of studies of First, Second and Third semesters as provided under the regulations in sequential order and has passed the First Semester Examination as a whole, and fulfils the conditions as laid in ordinance 7 and 8 above.

(v) **Fifth Semester:**

Provided that he/she has undergone a regular course of studies of First, Second, Third and Fourth semesters as provided under the regulations in sequential order and has passed the First and Second Semester examinations as a whole, respectively; and fulfils the conditions as laid in ordinance 7 and 8 above.

(vi) **Sixth Semester:**

Provided that he/she has undergone a regular course of studies of First, Second, Third, Fourth and Fifth semesters as provided under the regulations in sequential order and has passed First, Second and Third Semester examinations as a whole, respectively and fulfils the conditions as laid in ordinance 7 and 8 above.

10. Three weeks after the termination of examination or as soon thereafter as possible, the Registrar shall publish the result of the candidates. Each candidate shall receive a certificate indicating details of marks obtained in each examination. Successful candidates at the end of Semester-VI examination shall receive a degree stating the division according to **ordinance 15.**

11. The minimum number of marks required to pass the examination in each Part shall be 35% in each subject, provided that in subject with practical the percentage shall be required separately in written and practical/lab work. The candidate shall also be entitled to grace marks as admissible under the ordinances relating to the `GENERAL GRACE MARKS`.
12. The examination in Semester I, II, III, IV, V and VI shall be open to a person who satisfies the requirements at A and B as given below:

'A'

The first semester examination shall be open to a person: Has passed at least, one academic year previously, the +2 examination of Punjab School Education Board, or any other examination recognised as equivalent thereto and fulfils the conditions provided in ordinance 12 **'B'**.

Semesters II, III, IV, V and VI examinations shall be open to a person who has passed the previous semester examination/s or fulfils the conditions provided in ordinance 12 **'B'**.

'B'

- (I) (a) Has remained on the rolls of a college admitted to the privileges of the University throughout the academic year preceding the examination.
- (b) (i) Every candidate will be required to attend a minimum of 75% lectures delivered to that class in each paper.
- (ii) In case of students, whose names are struck off from the rolls due to non-payment of fee, and is admitted later on, his/her attendance shall not be counted for that period.
- (iii) The shortage in the attendance to lectures by the candidate will be condoned as per rules made by the University from time to time.

OR

- (II) Has completed the prescribed course of instructions for the examination but has not appeared or having appeared has failed in the examination. Such a candidate may appear in any subsequent semester examination with in the period prescribed in the Statues.
13. The pass students or the students declared reappear in not more than two papers in B. C. A. Part-I & II from Punjab University, Guru Nanak Dev University and Punjab Technical University shall be treated at par with the corresponding students of this University, only if he/she will have cleared the deficiency papers as a supplementary. Such Candidates will be given two attempts. The marks secured by such students shall be scaled to the marks allotted to each subject by this University.
14. Candidates who have not studied the subject of Punjabi up to matriculation shall be required to pass Punjabi either up to matriculation standard or ***Punjabi Preveshka*** during the course period to qualify for the award of degree.
15. The successful candidates shall be classified on the basis of aggregate marks secured in B. C. A. Part-I, Part-II and III taken together as under:
 - (a) 75% or more in First division with Distinction.
 - (b) 60% or more but less than 75% in the First division.
 - (c) 50% or more but less than 60% in the Second division.
 - (d) 35% or more but less than 50% in the Third division.
16. A University medal will be awarded to student who secures First position in the University on the basis of the marks obtained in all three parts taken together. The general rules and conditions of the University for the Award of medal/prizes etc. will be applicable in the award of University medal to the topper of this examination.
17. *A candidate who is declared reappear or fail at any stage shall not be eligible for scholarship, Prize or Medal.*

SYLLABUS BACHELOR OF COMPUTER APPLICATIONS

OUTLINE OF PAPERS AND TESTS for B.C.A. First Year – First Semester

Code	Title of Paper	Hours per Week	University Examination	Internal Assessment	Max. Marks	Exam. Duration Hours
BCA-111	General English – I	4	80	20*	100	3
BCA-112	Punjabi (Compulsory) or Punjab History and Culture **	4	80	20	100	3
BCA-113	Fundamentals of Information Technology	4	80	20	100	3
BCA-114	Programming Fundamentals using C	4	80	20	100	3
BCA-115	Office Automation and Productivity Tools	4	80	20	100	3
BCA-116	Software Lab – I (based on paper BCA-114: Programming Fundamentals using C)	4	40	10	50	3
BCA-117	Software Lab – II (based on paper BCA-115: Office Automation and Productivity Tools)	4	40	10	50	3
Total			480	120	600	

Note:

1. The break up of marks for the practical will be as under:
 - i. Lab Record (Internal Assessment) 10 Marks
 - ii. Viva Voce (External Evaluation) 20 Marks
 - iii. Program Development and Execution(External Evaluation) 20 Marks

2. The break up of marks for the internal assessment for theory except BCA-111 will be as under:
 - i. One or two tests out of which minimum one best will be considered for assessment. 15 Marks
 - ii. Attendance, Class participation and behaviour 5 Marks

*The break up of marks for the internal assessment for BCA-111: General English – I will be as under:

- i. Formal assessment through Interview/Self Introduction/Recitation etc. 10 Marks
- ii. Conversation Skills (particularly listening and speaking to be evaluated through oral examination) 5 Marks
- iii. Attendance, Class participation and behaviour 5 Marks

**** Only those students who have not studied Punjabi up to matriculation can opt for Punjab History and Culture. The code for the paper is same.**

OUTLINE OF PAPERS AND TESTS
for
B.C.A. First Year – Second Semester

Code	Title of Paper	Hours per Week	University Examination	Internal Assessment	Max. Marks	Exam. Duration Hours
BCA-121	General English – II	4	80	20*	100	3
BCA-122	Digital Electronics	4	80	20	100	3
BCA-123	Mathematical Foundation of Computer Science	4	80	20	100	3
BCA-124	Data Structures	4	80	20	100	3
BCA-125	Programming with Visual Basic	4	80	20	100	3
BCA-126	Software Lab – III (based on BCA-124: Data Structures)	4	40	10	50	3
BCA-127	Software Lab – IV (based on paper BCA-125: Programming with Visual Basic)	4	40	10	50	3
Total			480	120	600	

Note:

1. The break up of marks for the practical will be as under:
 - i. Lab Record (Internal Assessment) 10 Marks
 - ii. Viva Voce (External Evaluation) 20 Marks
 - iii. Program Development and Execution(External Evaluation) 20 Marks
2. The break up of marks for the internal assessment for theory papers except BCA-121 will be as under:
 - i. One or two tests out of which minimum one best will be considered for assessment. 15 Marks
 - ii. Attendance, Class participation and behaviour 5 Marks

*The break up of marks for the internal assessment for BCA-121: General English – II will be as under:

- i. Formal assessment through Interview/Self Introduction/Recitation etc. 10 Marks
- ii. Conversation Skills (particularly listening and speaking to be evaluated through oral examination) 5 Marks
- iii. Attendance, Class participation and behaviour 5 Marks

BCA-111: General English – I

Max Marks: 80

Min Pass Marks: 35%

Maximum Time: 3 Hrs.

Lectures to be delivered: 45-55 Hrs

General English has been designed to develop the student's general competence in English. The overall aims of the course are to enable the learner to use English effectively for study purpose across the curriculum and develop and integrate the use of the four language skills, i.e. listening, speaking, reading and writing.

Texts Prescribed for Grammar and Vocabulary:

W. Standard Allen: Living English Structure (Orient Longman)

Wilford D. Best: The Student's Companion (Rupa)

SECTION A: Comprehension

15 Marks

One unseen passages of 250-300 words in length with a variety of comprehension questions including 05 marks for word-attack skills such as word formation and inferring meaning, finding opposites etc. The passage can be a factual passage (e.g., instruction, description, report etc.) or a literary passage (e.g., extract from fiction, drama, poetry, essay or biography), or a discursive passage involving opinion, (argumentative, persuasive or interpretative text).

SECTION B: Vocabulary

15 Marks

Change the Number (attempt any 5 out of 7)(½ marks each)

2 ½ marks

Change the Gender (attempt 5 any out of 7)(½ marks each)

2 ½ marks

Words commonly mis-spelt (correct any 5 out of 7)(½ marks each)

2 ½ marks

Antonyms(attempt any 5 out of 7) (½ marks each)

2 ½ marks

Synonyms (attempt any 5 out of 7) (½ marks each)

2 ½ marks

Fill up using correct determinant (attempt any 5 out of 7) (½ marks each)

2 ½ marks

SECTION B: Grammar

25 Marks

Filling up the correct form types of the tense in the sentence: present/ past /future tense with simple/continuous/perfect/ perfect continuous forms (Attempt any 5 out of 7)

5 marks

Reordering word groups in the sentence to make a meaning full sentence. (Attempt any 5 out of 7)

5 marks

Identify various types of clauses and phrases in the sentence: finite and non-finite subordinate clauses: noun clauses and phrases, adjective clauses and phrases, adverb clauses and phrases(Attempt any 5 out of 7)

5 marks

Conversion among various types of sentences: affirmative, interrogative sentences, negation, exclamations (Attempt any 5 out of 7)

5 marks

Write meaning of given word and using in the sentence (Attempt any 5 out of 7)

5 marks

SECTION D: Composition

25 Marks

Composition on a given topic/title based on any current social, environment, health issues. Students will be asked to attempt any one out of 4-5 options with word limit 150-175.

10 Marks

Formal Letter Writing (invitation, accepting/rejecting an invitation, apology, welcome, thanking complements)

7 ½ Marks

Translating a paragraph from Punjabi/Hindi to English (50-75 words)

7 ½ Marks

e[Zb nze L 80
ftÅ/ ftu'A gk; j'D bJh nze L 35%
ghohnv L45-55

;wK L 3 xzN/
e[b nfXnkgB

f;b/p; ns/ gkm-g[;seK

- 1H niw/o f;zx n"by L fJ;ae pkM'A Bwkia dk jZi BkjhA (bx{ BkN ;zrqfj)
- 2H r[biako f;zx ;zX{L fszB SZe/ (ejkDh ;zrqfj-;zgzdeL vkH oxpho f;zx f;oiDk)
- 3H (T) g?ok ouBk L tsktoDh w;b/ ns/ ;wkXkB* (g[;se s/ nXkfos gq;aB 11 s'A 15 nfXnkfJ sZe)
- (n) g?ok gVQ e/ gq;aBK d/ T[Zso d/DK
- 4H ftnkeoB L
- (T) ftnkeoB d/ p[fBnkdh sZs
- (n) Gk;ak tzBrhnK L Gk;ak dk Ne;kbh o{g, Gk;ak s/ T[g-Gk;ak dk nzso ns/ nzso ;pzX, gzikph T[g-Gk;aktK d/ gSkD fuzBQ
- (J) ;apd ;q/DhnK ns/ o{gKsoB
- (;) r[ow[yh fbZgh ns/ ;apd i'V
- 5H eqwKe 1, 2 ns/ 4 d/ nkXko *s/ S'N/ gq;aB

nze-tzv ns/ g/go ;?No bJh jdkfJsK

- 1H fe;/ fJeKrh dk ;ko iK ft;ak t;s{ (d' ftu'A fJe) **10 nze**
- 2H fe;/ ejkDh dk ft;ak t;s{ iK ;ko (d' ftu'A fJe) **10 nze**
- 3H (T) g?ok ouBk (g[;se BzL 3 Bkb ;pzfXs fszB ftf;anK ftu'A fe;/ fJe T[Zs/ g?ok fbyD bJh fejk ikt/)
- 05 nze**
- (n) g[;se Bz L 3 ftu'A g?ok d/ e/ T[; pko/ gzi gq;aaBK d/ T[Zso
- 05 nze**
- 4H Bzpo 4 T[Zs/ fdZs/ ftnkeoB d/ f;b/p; d/ nkXko T[Zs/ toDksfwe uko gq;aB g[ZS/ ikDr/ d' dk T[Zso d/Dk bJh fejk ikt/rk.
- 20 nze**
- 5H (T) eqwKe 1 ns/ 2 *s/ doi gkm-g[;seK ftu'A gzi tkeK dh Gk;ak dk fttjkfoe ftnkeofBe ft;ab/;aD. fJj gq;aB BzH 4 ftu fBoXkfos ftnkeoB tkb/ gZyK T[Zs/ jh nXkfos j't/rk.

5%4=20 nze

(n) eqwKe 1, 2 ns/ 4 d/ nkXko *s/ 5 S'N/ gqPÅB g[ZS/ ikD

5%2=10 nze

**BCA-112: Punjab History and Culture (1000-1849 A.D.)
(Special paper in lieu of Punjabi (Compulsory))**

Max Marks: 80

Min Pass Marks: 35%

Maximum Time: 3 Hrs.

Lectures to be delivered: 45-55 Hrs

(A) INSTRUCTION FOR THE PAPER SETTER

The question paper will consist of four sections A, B, C and D. Section A, B and C will have two questions from the respective section of the syllabus carrying 15 marks for each question. Section D will consist of 8-10 short answer type questions carrying a total of 20 marks, which will cover the entire syllabus uniformly. Candidates are required to attempt five questions in all by selecting at least one question from the section A, B and C. Section D is compulsory.

(B) INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions in all by selecting at least one question from the section A, B and C. Section D is compulsory.

SECTION A

1. The Punjab under Turke-Afghan Sultans.
2. The Punjab under the Great Mughals.
3. Salient features of the Bhakti Movement and Sufism in The Punjab.
4. Guru Nanak Dev's teachings and impact on society.
5. Development of Sikhism (1539-1606) with special reference to Sangat, Masand System, Compilation of Adi Granth and Martydom of Guru Arjan Dev.

SECTION B

6. Martydom of Guru Teg Bahadur, Foundation of Khalsa by Guru Gobind Singh
7. Banda Bahadur and his achievement
8. Sikh Struggle for Sovereignty in Punjab 1716 to 1767.
9. Ranjit Singh's rise to power: his civil and military administration and relations with the British.
10. The Anglo-Sikh Wars and Annexation of the Punjab.

SECTION C

11. Development of Punjabi Language and Literature classical writings and famous legends of the Punjab.
12. Social life with special reference to position of women, fairs, festivals, folk music, dances and games in the Punjab.

References:

1. Kirpal Singh (ed.): *History and Culture of the Punjab*, Part-II, Patiala, 1990, (3rd edition).
2. Fauja Singh (ed) : *History of Punjab*, Vol 1, Patiala, 1972
3. G.S. Chhabra : *The Advanced History of the Punjab*, Vol. 1
4. J.S. Grewal : *The Sikhs of Punjab, The New Cambridge History of India*, Hyderabad, 1990.
5. Khuswant Singh, *A History of Sikhs*, Vol. I, 1469-1837, Delhi 1991.
6. G.C. Narang : *Transformation of Sikhism*, New Delhi, 1960 (5th edition).
7. B. S. Nijjar : *Punjab Under the Great Mughals*, Bombay, 1961
8. Sukhwinder Kaur Dhillon: *Religious History of Early Medieval Punjab*, Delhi 1991.

BCA-113: Fundamentals of Information Technology

Max Marks: 80

Min Pass Marks: 35%

Maximum Time: 3 Hrs.

Lectures to be delivered: 45-55 Hrs

(A) INSTRUCTION FOR THE PAPER SETTER

The question paper will consist of four sections A, B, C and D. Section A, B and C will have two questions from the respective section of the syllabus carrying 15 marks for each question. Section D will consist of 8-10 short answer type questions carrying a total of 20 marks, which will cover the entire syllabus uniformly. Candidates are required to attempt five questions in all by selecting at least one question from the section A, B and C. Section D is compulsory.

(B) INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions in all by selecting at least one question from the section A, B and C. Section D is compulsory.

SECTION-A

Computer Fundamentals: Block diagram of a computer, characteristics of computers and generations of computers.

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

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

Memories: Main Memories - RAM, ROM and Secondary Storage Devices - Hard Disk, Compact Disk, DVD.

SECTION-B

Number System: Non-positional and positional number systems, Base conversion, Concept of Bit and Byte, binary, decimal, hexadecimal, and octal systems, conversion from one system to the other.

Binary Arithmetic: Addition, subtraction and multiplication.

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

SECTION-C

Introduction to Computer Terms like Hardware, Software, Machine Language, Assembly Language and Assembler, High Level Language and Compiler v/s Interpreter.

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

Introduction to the Concept to Internet: Evolution of Internet, Internet Applications, WWW, E-mail, FTP, TELNET, Web Browsers.

Multimedia: Concepts, Components and Application.

References:

- 1 P.K. Sinha and P. Sinha, Foundations of Computing, First Edition, 2002, BPB.
- 2 Chetan Srivastva, Fundamentals of Information Technology, Kalyani Publishers.
- 3 Turban Mclean and Wetbrete, Information Technology and Management, Second Edition, 2001, John Wiley & Sons.
- 4 Satish Jain, Information Technology, BPB, 1999.

BCA-114: Programming Fundamentals using C

Max Marks: 80

Min Pass Marks: 35%

Maximum Time: 3 Hrs.

Lectures to be delivered: 45-55 Hrs

(A) INSTRUCTION FOR THE PAPER SETTER

The question paper will consist of four sections A, B, C and D. Section A, B and C will have two questions from the respective section of the syllabus carrying 15 marks for each question. Section D will consist of 8-10 short answer type questions carrying a total of 20 marks, which will cover the entire syllabus uniformly. Candidates are required to attempt five questions in all by selecting at least one question from the section A, B and C. Section D is compulsory.

(B) INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions in all by selecting at least one question from the section A, B and C. Section D is compulsory.

SECTION-A

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

Basic structure of C program: Character set, Identifiers and keywords, constants, variable.

Data types, input and output, type conversion,

Operators and expressions: Arithmetic, Unary, Logical and Relational operators, assignment operators, Conditional operators, type conversion. Library functions.

SECTION-B

Control statements: branching, looping using For, While and Do-While statements, nested control structures, switch, break and continue statements.

Arrays: Definition, accessing and dereferencing operators, declaration, assignment, one dimensional and two dimensional arrays.

Strings: input/output of strings, string handling functions, table of strings.

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

SECTION-C

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

Functions: prototype, definition and call, formal and actual arguments, methods of parameter passing to functions, recursion versus iteration.

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

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

Text Book:

1 E. Balagurusamy, "Programming in C", Tata McGraw Hill.

References:

1 Kernighan and Ritchie, "The C Programming Language", PHI.

2 Byron Gotfried, "Programming in C".

3 Kamathane, "Programming in C", Oxford University Press.

BCA-115: Office Automation and Productivity Tools

Max Marks: 80

Min Pass Marks: 35%

Maximum Time: 3 Hrs.

Lectures to be delivered: 45-55 Hrs

(A) INSTRUCTION FOR THE PAPER SETTER

The question paper will consist of four sections A, B, C and D. Section A, B and C will have two questions from the respective section of the syllabus carrying 15 marks for each question. Section D will consist of 8-10 short answer type questions carrying a total of 20 marks, which will cover the entire syllabus uniformly. Candidates are required to attempt five questions in all by selecting at least one question from the section A, B and C. Section D is compulsory.

(B) INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions in all by selecting at least one question from the section A, B and C. Section D is compulsory.

SECTION-A

Concept of an Office : Purpose of an office, activities in an office, structure of an office, office system, office manual, document flow management in an office.

Office Automation: Introduction, Today's office, need for office automation, its advantages, disadvantages and office automation tools.

Office Automation Technology: Office equipment, workstation communication and convergence of technologies.

SECTION- B

Windows : Installing WINDOWS with set-up, starting and quitting WINDOWS, basic elements of WINDOWS, working with menus dialogue boxes, window applications, program manager, file manager, print manager, control panel, write, paint brush, accessories including calculator, calendar, clock, card file, note pad, recorder etc.

Power Point: Making presentations, Inserting objects, and narration.

SECTION- C

MS Word: Salient features of MS WORD, file, edit, view, insert, format, tools, tables, window, help options and all of their features, options and sub options etc., transfer of files between MS WORD and other word processors and software packages.

Excel: Excel worksheet, data entry, editing, cell addressing ranges, commands, menus, copying & moving cell content, inserting and deleting rows and column, column formats, cell protection, printing, creating, displaying and printing graphs, statistical functions.

References:

- 1 R.K. Chopra, Office Organization and management
- 2 Content Development Group, Working with MS-OFFICE 2000, TMH
- 3 Mastering MS Office 97 Professional by Mosley, BPB Publication
- 4 Mastering MS Office 2000, Professional Edition by Courter, BPB Publication.
- 5 MS Office 2000 Training Guide by Maria, BPB Publications.
- 6 MS Officer Complete by SYBEX
- 7 Bott, using MS Office 97 (PHI)
- 8 Bott, using MS Office 2000 (PHI)

BCA-116: Software Lab – I
(Based on paper BCA-114: Programming Fundamentals using C)

Max Marks: 50

Maximum Time: 3 Hrs.

Min Pass Marks: 35%

Practical Sessions to be conducted: 40-50 Hrs

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

- 1 Program to find sum of first N natural numbers using Input.
- 2 Program to find the sum of odd numbers and sum of even numbers from the list of given numbers.
- 3 Program to test whether an entered number is positive, negatives or zero.
- 4 Program to find sum and average of numbers up to value X divisible by N.
- 5 Program to find the sum of digits of a number.
- 6 Program to convert a Binary number into Decimal, Octal.
- 7 Program to convert a Decimal number into Binary, Octal.
- 8 Program to print N terms of a Fibonacci Series.
- 9 Program to evaluate $x - x^2 / 2! + x^3 / 3! - x^4 / 4! - \dots$ (upto n terms).
- 10 Program to check whether a given Number or a given string is palindrome or not.
- 11 Program to reverse a given string.
- 12 Program to check whether a given number is prime or not.
- 13 Program to find the prime numbers up to N.
- 14 Program to search a string in an array using read-data.
- 15 Program to find the frequency of vowels in a given string.
- 16 Program to find the frequency of each character in a given string.
- 17 Program to find greatest in a matrix using subroutine.
- 18 Program for Matrices Addition. And subtraction.
- 19 Program for Matrix Transpose.
- 20 Program to find sum of rows and column of a matrix.
- 21 Program to find sum of both diagonals of the matrix.

The break up of marks for the practical will be as under

- | | |
|--|-----------------|
| i. Lab Record (Internal Assessment) | 10 Marks |
| ii. Viva Voce (External Evaluation) | 20 Marks |
| iii. Program Development and Execution(External Evaluation) | 20 Marks |

BCA-117: Software Lab – II

(Based on paper BCA-115: Office Automation and Productivity Tools)

Max Marks: 50

Maximum Time: 3 Hrs.

Min Pass Marks: 35%

Practical Sessions to be conducted: 40-50 Hrs

This laboratory course will comprise as exercises to supplement what is learnt under paper BCA-115: Office Automation and Productivity Tools. Students are required to practice following:

WINDOWS 98/XP or any available version of Windows Operating System

Installing WINDOWS with set-up, Starting and quitting WINDOWS, Basic elements of WINDOWS, Working with menus dialogue boxes, Window applications, Windows explorer, My Computer, Recycle bin. Programs, Favourites, My Documents.

Settings- Control Panel, Printers, Taskbar and Start menu, Folder Options, Active Desktop. Find, Help, Run.

Accessories – Entertainment, Games, System tools, Internet tools, Calculator, Calendar, Clock, Card file, Note pad, Write pad, Recorder etc.,

MS WORD and POWER POINT

Salient features of MS WORD, Installation of MS WORD, Starting and quitting of MS WORD, File, Edit, View, Insert, Format, Tools, Tables, Window, Help options and all of their features, Options and sub options etc. Transfer of files between MS WORD and other word processors and software packages.

Salient features of POWER POINT, Installation, Starting and quitting, File, Edit, View, Insert, Format, Tools, Slide Show, Window, Help options and all of their features, Options and sub options etc. Transfer of files between POWER POINT and other word processors and software packages.

EXCEL

Spread Sheet. Getting started with Excel worksheet, Entering data into work sheet, Editing cell addressing, Ranges and range names, Commands, Menus, Copying and moving cell contents, Inserting and deleting rows and columns, Column width control, Cell protection, Printing reports, Creating and displaying graphs, Statistical functions.

The break up of marks for the practical will be as under

- | | |
|--|-----------------|
| i. Lab Record (Internal Assessment) | 10 Marks |
| ii. Viva Voce (External Evaluation) | 20 Marks |
| iii. Program Development and Execution(External Evaluation) | 20 Marks |

BCA-121: General English – II

Max Marks: 80

Min Pass Marks: 35%

Maximum Time: 3 Hrs.

Lectures to be delivered: 45-55 Hrs

General English has been designed to develop the student's general competence in English. The overall aims of the course are to enable the learner to use English effectively for study purpose across the curriculum and develop and integrate the use of the four language skills, i.e. listening, speaking, reading and writing.

Texts Prescribed for Grammar and Vocabulary:

W. Standard Allen: Living English Structure (Orient Longman)

Wilford D. Best: The Student's Companion (Rupa)

SECTION A: Comprehension

15 Marks

One unseen passages of 300-350 words in length with a variety of comprehension questions including 05 marks for word-attack skills such as word formation and inferring meaning, finding opposites etc. The passage can be a factual passage (e.g., instruction, description, report etc.) or a literary passage (e.g., extract from fiction, drama, poetry, essay or biography), or a discursive passage involving opinion, (argumentative, persuasive or interpretative text).

SECTION B: Vocabulary

20 Marks

Fill up using correct form of verb (Attempt any 5 out of 7) (½ marks each) 2 ½ marks

Usage of the adverb, adjective etc. (Attempt any 5 out of 7) (½ marks each) 2 ½ marks

Write Antonym of the given word and use both the given word and its antonym in the single sentence clarifying meaning and usage (Attempt any 5 out of 7) 5 marks

Give different meanings to Synonyms and use them in sentences (Attempt any 5 out of 7) 5 marks

Give meaning and make sentences for idioms (Attempt any 5 out of 7) 5 marks

SECTION C: Grammar

20 Marks

Conversion among various types of the tenses in the sentence: present/ past /future tense with simple/continuous/perfect forms (Attempt any 5 out of 7) 5 marks

Conversion between Direct/Indirect speech (Attempt any 5 out of 7) 5 marks

Conversion between active/passive voice (Attempt any 5 out of 7) 5 marks

Conversion among various types of sentences: affirmative, interrogative sentences, negation, exclamations (Attempt any 5 out of 7) 5 marks

SECTION D: Composition

25 Marks

Composition on a given topic/title based on any current social, environment, health issues. Students will be asked to attempt any one out of 4-5 options with word limit 150-175. 10 Marks

Formal Letter Writing (Applying for a job, making a complaint, asking for information) 7 ½ Marks

Translating a paragraph from Punjabi/Hindi to English (50-75 words) 7 ½ Marks

BCA-122: Digital Electronics

Max Marks: 80

Min Pass Marks: 35%

Maximum Time: 3 Hrs.

Lectures to be delivered: 45-55 Hrs

(A) INSTRUCTION FOR THE PAPER SETTER

The question paper will consist of four sections A, B, C and D. Section A, B and C will have two questions from the respective section of the syllabus carrying 15 marks for each question. Section D will consist of 8-10 short answer type questions carrying a total of 20 marks, which will cover the entire syllabus uniformly. Candidates are required to attempt five questions in all by selecting at least one question from the section A, B and C. Section D is compulsory.

(B) INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions in all by selecting at least one question from the section A, B and C. Section D is compulsory.

SECTION- A

Fundamentals: Definitions of Digital Signals, Digital Waveform, Digital Logic, Gate propagation delay time, Digital Operations, Digital Integrated Circuits, Digital IC signal levels

SECTION- B

Number System: Number Systems: Decimal, Binary, Octal and Hexadecimal number system and conversion, Binary weighted codes and conversion, Binary arithmetic, 1's Complement and 2's Complement, Overflow and Underflow.

SECTION- C

Boolean Algebra: Boolean Algebra Theorems, Truth-Table. Realization of switching functions using AND, OR, NOT logic gates, sum of product & product of sums, 2-Variable, 3-Variable, 4-Variable. Karnaugh maps, Simplification of expressions.

Text Book:

1. Digital Computer Electronics, MALVINO, ALBERT PAUL /BROWN, JERALD A., Tata Mcgraw-Hill

References:

1. Jyotsna Sengupta, 'Fundamentals of Computer Organization and Architecture', NuTech Books, Deep and Deep Publications, New Delhi, 2009
2. M. Morris Mano, Digital Logic and Computer Design, Prentice Hall of India.
3. Rajaraman, T. Radhakrishishnan, An Introduction to Digital Computer Design, Prentice Hall of India.

BCA-123: Mathematical Foundation of Computer Science

Max Marks: 80

Min Pass Marks: 35%

Maximum Time: 3 Hrs.

Lectures to be delivered: 45-55 Hrs

(A) INSTRUCTION FOR THE PAPER SETTER

The question paper will consist of four sections A, B, C and D. Section A, B and C will have two questions from the respective section of the syllabus carrying 15 marks for each question. Section D will consist of 8-10 short answer type questions carrying a total of 20 marks, which will cover the entire syllabus uniformly. Candidates are required to attempt five questions in all by selecting at least one question from the section A, B and C. Section D is compulsory.

(B) INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions in all by selecting at least one question from the section A, B and C. Section D is compulsory.

SECTION- A

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

Rank of a matrix, consistency of linear system of equations, Characteristic equation, eigen values & eigen vectors, Diagonalization of matrices, Cayley Hamilton theorem.

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

SECTION-B

Counting: The Basics of counting, Permutations and combinations.

Binomial Theorem: Expansion, General term, Middle term, term independent of variable.

Probability: Elementary events, Sample space, Compound events, Type of events, Mutually Exclusive, Independent events

Addition Law of probability (for 2 and 3 events), Conditional probability, Multiplication Theorem of probability, Baye's theorem,

SECTION-C

Linear Programming: Foundation of the problem, Graphical method to solve LPP of two variables, General Linear Programming problem, Simplex method, Artificial variable techniques, Two phase method, Dual of LPP

Transportation problem, Assignment Problem.

Text Book:

1. "Higher Engineering Mathematics", B. S. Grewal, 35th Edition, Khanna Publishers.

References:

1. "Advanced Engineering Mathematics", E.Kreyszig, 8th Edition, Wiley.
2. "Advanced Engineering Mathematics", R. K. Jain & S.R.K. Iyenger, Wiley Eastern. Edition
3. "Engineering Mathematics Vol I & II" S. S. Sastry, PHI.

BCA-124: Data Structures

Max Marks: 80

Min Pass Marks: 35%

Maximum Time: 3 Hrs.

Lectures to be delivered: 45-55 Hrs

(A) INSTRUCTION FOR THE PAPER SETTER

The question paper will consist of four sections A, B, C and D. Section A, B and C will have two questions from the respective section of the syllabus carrying 15 marks for each question. Section D will consist of 8-10 short answer type questions carrying a total of 20 marks, which will cover the entire syllabus uniformly. Candidates are required to attempt five questions in all by selecting at least one question from the section A, B and C. Section D is compulsory.

(B) INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions in all by selecting at least one question from the section A, B and C. Section D is compulsory.

SECTION- A

Basic concepts and notations: types of data structures and data structure operations, mathematic notations and functions, algorithmic complexity, Big 'O' notation, time and space trade off.

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

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

SECTION- B

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

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

SECTION- C

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

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

Text Book

- 1 Seymour Lipschutz, "Theory and Practice of Data Structures", McGraw Hill.

References

- 1 Tenenbaum, Y. Lanhghsam and A. J. Augenstein, "Data Structures using C and C++", Prentice Hall of India.
- 2 Robert Sedgewick, "Algorithms in C", Pearson Education.

BCA-125: Programming with Visual Basic

Max Marks: 80

Min Pass Marks: 35%

Maximum Time: 3 Hrs.

Lectures to be delivered: 45-55 Hrs

(A) INSTRUCTION FOR THE PAPER SETTER

The question paper will consist of four sections A, B, C and D. Section A, B and C will have two questions from the respective section of the syllabus carrying 15 marks for each question. Section D will consist of 8-10 short answer type questions carrying a total of 20 marks, which will cover the entire syllabus uniformly. Candidates are required to attempt five questions in all by selecting at least one question from the section A, B and C. Section D is compulsory.

(B) INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions in all by selecting at least one question from the section A, B and C. Section D is compulsory.

SECTION- A

Getting started with Visual Basic: Integrated Development Environment (IDE), Elements of user interface, Designing user interface, Programming an application, Simple Project Creation, VB as event driven programming, Customizing the environment

Visual Basic as Language: Variables, Constants, Arrays, Collections, Procedures, Arguments, Functions, Control flow statements, Loop statements, Nested control structures.

Working with Forms: Appearance of forms, Designing menu, Drag and Drop methods

SECTION-B

Drawing with VB: Graphics controls, Co-ordinate systems, Graphic methods: Lines, Circle, Curves, Rubber shapes, Transparent drawings, Better rubber shapes

Multiple Document Interface: Basics of MDI, Accessing child forms, implementing scrolling forms.

SECTION-C

The Active Data Objects: Designing with the data environment, ADO data control.

Visual Basic and the Web: Web Browsing objects, Web Browsing controls, Document object, History object.

ActiveX Controls: TextBox control, ListBox control, ComboBox control, ScrollBar control, Slider control, File control.

Common Dialog Controls: Color, Font, FileOpen, FileSave, Print and Help

Text Book

1. Evangelos Petroustos “*Mastering Visual Basic 6*” BPB Publication

References:

1. Mastering Visual Basic 6.0 by Petroustos.
2. Visual Basic 6 Complete by Sybex.
3. Mastering Database Programming with Visual Basic 6 by Petroustos

BCA-126: Software Lab – III
(Based on paper BCA-124: Data Structures)

Max Marks: 50

Min Pass Marks: 35%

Maximum Time: 3 Hrs.

Practical Sessions to be conducted: 40-50 Hrs

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

- 1 Program for implementing binary and linear search.
- 2 Program for implementing sorting techniques studied in section C of paper BCA-124: Data Structures.
- 3 Program to insert and delete an element from an array.
- 4 Program to store an array using sparse representation.
- 5 Program to apply various operation on stack.
- 6 Program for parenthesis matching using stack
- 7 Program for String reversal using stack.
- 8 Program to insert and delete nodes in a linked list.
- 9 Program to search a node in a linked list.
- 10 Program to insert and delete nodes in a queue.
- 11 Program to insert or delete node in a binary tree.
- 12 Program to traverse binary tree

The break up of marks for the practical will be as under

- | | |
|--|-----------------|
| i. Lab Record (Internal Assessment) | 10 Marks |
| ii. Viva Voce (External Evaluation) | 20 Marks |
| iii. Program Development and Execution(External Evaluation) | 20 Marks |

BCA-127: Software Lab – IV
(based on paper BCA-125: Programming with Visual Basic)

Max Marks: 50

Min Pass Marks: 35%

Maximum Time: 3 Hrs.

Practical Sessions to be conducted: 40-50 Hrs

This laboratory course will comprise as exercises to supplement what is learnt under paper BCA-125: Programming with Visual Basic. Students are required to develop the following programs in VB language:

1. Create a game to play tic-tac-toe.
2. Create an admission form with simple controls.
3. Create an array to perform linear search.
4. Create a program to sort a list of numbers using array.
5. Create a program to add and subtract matrices.
6. Write a program to swap two numbers using functions,
7. Find the greatest and smallest of numbers using functions,.
8. Create a text editor like notepad.
9. Draw a hut using lines and circle controls.
10. Draw an admission form using MDI.
11. CREATE A DATABASE TO STORE ADDRESS OF STUDENTS and display the address labels in text area.
12. Create a personal information form use combo boxes to select month, day and year for date of birth, and list box for city
13. Modify the text editor program to open an existing file and save the edited file also add sliders and scrollbars controls.
14. Create a calculator.

The break up of marks for the practical will be as under

- | | |
|--|-----------------|
| i. Lab Record (Internal Assessment) | 10 Marks |
| ii. Viva Voce (External Evaluation) | 20 Marks |
| iii. Program Development and Execution(External Evaluation) | 20 Marks |