PANJAB UNIVERSITY, CHANDIGARH-160014 (INDIA)
(Estd. under the Panjab University Act VII of 1947 — enacted by the Govt. of India)

FACULTY OF SCIENCE

SYLLABI

FOR

Bachelor of Computer Applications

First and Second Year (Semester system)
Third Year (Annual System)
Examinations, 2015-2016

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### Scheme of Examination, 2015 - 2016

#### First Semester

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Subject</th>
<th>LT/Week</th>
<th>Theory Marks</th>
<th>Internal Assessment</th>
<th>Exam. Hours</th>
<th>Paper Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>English (C) – A</td>
<td>6</td>
<td>90</td>
<td>10</td>
<td>3</td>
<td>BCA-101</td>
</tr>
<tr>
<td>2.</td>
<td>Panjabi/History &amp; Culture of Punjab – A</td>
<td>6</td>
<td>45</td>
<td>5</td>
<td>3</td>
<td>BCA-102</td>
</tr>
<tr>
<td>3.</td>
<td>Mathematics in Computer Science - I</td>
<td>6</td>
<td>90</td>
<td>10</td>
<td>3</td>
<td>BCA-103</td>
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<td>4.</td>
<td>Computing Software</td>
<td>6</td>
<td>90</td>
<td>10</td>
<td>3</td>
<td>BCA-104</td>
</tr>
<tr>
<td>5.</td>
<td>Computer Lab.: Based on BCA - 104</td>
<td>6</td>
<td>90</td>
<td>10</td>
<td>4</td>
<td>BCA-105</td>
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#### Second Semester

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Subject</th>
<th>LT/Week</th>
<th>Theory Marks</th>
<th>Internal Assessment</th>
<th>Exam. Hours</th>
<th>Paper Code</th>
</tr>
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<tbody>
<tr>
<td>6.</td>
<td>Environment &amp; Road Safety Education Qualifying paper (based on Class Tests and Field Work / Report)</td>
<td>-</td>
<td>70</td>
<td>-</td>
<td>1 ½</td>
<td>BCA-201</td>
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<tr>
<td>7.</td>
<td>English (C) – B</td>
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<td>90</td>
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<td>BCA-202</td>
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<tr>
<td>8.</td>
<td>Panjabi/History &amp; Culture of Punjab - B</td>
<td>6</td>
<td>45</td>
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<td>3</td>
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<td>9.</td>
<td>Mathematics in Computer Science - II</td>
<td>6</td>
<td>90</td>
<td>10</td>
<td>3</td>
<td>BCA-204</td>
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<tr>
<td>11.</td>
<td>Computer Lab.: Based on BCA-204</td>
<td>6</td>
<td>90</td>
<td>10</td>
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<td>BCA-205</td>
</tr>
</tbody>
</table>

* The Environment & Road Safety Education is a compulsory qualifying paper, which the students have to study in the B.Sc. 1st year (2nd Semester). If the student/s failed to qualify the paper during the 2nd Semester, he/she/they be allowed to appear/qualify the same in the 4th or 6th Semester/s.
### Third Semester

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Subject</th>
<th>LT/Week</th>
<th>Theory Marks</th>
<th>Internal Assessment</th>
<th>Exam. Hours</th>
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<tr>
<td>10.</td>
<td>Computer Based Numerical Methods</td>
<td>6</td>
<td>90</td>
<td>10</td>
<td>3</td>
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<td>11.</td>
<td>Data Structures</td>
<td>6</td>
<td>90</td>
<td>10</td>
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<td>BCA-302</td>
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<td>12.</td>
<td>Implementation of Object Oriented concept through C++</td>
<td>6</td>
<td>90</td>
<td>10</td>
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<td>13.</td>
<td>Computer Lab.: Based on BCA – 301, BCA – 302 and BCA – 303</td>
<td>12</td>
<td>45</td>
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### Fourth Semester

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<th>Sr. No.</th>
<th>Subject</th>
<th>LT/Week</th>
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<th>Internal Assessment</th>
<th>Exam. Hours</th>
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<tr>
<td>14.</td>
<td>Project Management &amp; System Development</td>
<td>6</td>
<td>90</td>
<td>10</td>
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<td>15.</td>
<td>Client Server Computing using ORACLE</td>
<td>6</td>
<td>90</td>
<td>10</td>
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<td>16.</td>
<td>Understanding UNIX</td>
<td>6</td>
<td>90</td>
<td>10</td>
<td>3</td>
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<td>Computer Lab.: Based on BCA-402 and BCA-403</td>
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<td>45</td>
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## THIRD YEAR

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<td>1.</td>
<td>Entrepreneurship Development Programme</td>
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<td>10</td>
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<td>2.</td>
<td>Data Communication &amp; Networks</td>
<td>5</td>
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<td>Internet Programming</td>
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<td>5.</td>
<td>Discrete Mathematics</td>
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<td>6.</td>
<td>Project and Seminar</td>
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<td>7.</td>
<td>Computer Lab.1: Based on BCA-19</td>
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<td>90</td>
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<td>8.</td>
<td>Computer Lab.2: Based on BCA-20</td>
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<td>90</td>
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**FIRST SEMESTER**

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<thead>
<tr>
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<th>BCA - 101</th>
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<td>Paper Title</td>
<td>English (Compulsory) - A</td>
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<table>
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<tr>
<th>Paper Code</th>
<th>BCA - 102</th>
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<tbody>
<tr>
<td>Paper Title</td>
<td>Punjabi (Compulsory) - A</td>
</tr>
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<td>Theory Marks</td>
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<td>Number of Lectures</td>
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**OR**

<table>
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<tr>
<th>Paper Code</th>
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<tbody>
<tr>
<td>Paper Title</td>
<td>HISTORY AND CULTURE OF PUNJAB</td>
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<td>Number of Lectures</td>
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<table>
<thead>
<tr>
<th>Paper Code</th>
<th>BCA - 103</th>
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<tbody>
<tr>
<td>Paper Title</td>
<td>Mathematics in Computer Science-I</td>
</tr>
<tr>
<td>Theory Marks</td>
<td>90</td>
</tr>
<tr>
<td>Number of Lectures</td>
<td>60 (45 minutes duration)</td>
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Outlines of Test, Syllabi and Courses of Reading for BCA, First Year (English Compulsory) Examination 2015-2016

M.Marks: 100
Theory: 90
Int.Assess: 10

Semester I

Book Prescribed: *Colours of Expression* by Harbhajan Singh published by Publication Bureau, Panjab University, Chandigarh

Section A

1) **Short Stories** (1 & 2)
   
   One essay type question on summary/Character/Incident
   (one out of two with internal choice) 15 marks

II) **Prose** (1 to 3)
   
   Long essay type question on Summary/Theme
   (one out of two with internal choice) 15 marks

III) **Poetry** (1 to 6)  15 marks

   Summary (one out of two with internal choice) 5 marks

   Short Questions (two out of three) 5 marks

   Reference to the Context (one out of two with internal choice) 5 marks

Section B

1) Word formation from Prose and Stories and their use in sentences (5 out of 8) 10 marks

2) Use of textual words and idioms in sentences (5 out of 8) 10 marks

3) Translation from Hindi/Punjabi to English (a small Paragraph) 10 marks

   OR

   For Foreign Students (Paraphrase of Poetry Passage)

4) **Official, Business and Letters to the Editors** 15 marks
पंचायत रजिस्ट्री - श्री.मौ.इ. ग्राम परिषद
मंत्रित्व परिषद
समेत 2015 ई. से सिद्धिविलास चरण

वेळा अंक : 50
प्रविध्या : 45
सिद्धिविलास अनुमोदन : 05
संख्या: 3 पृष्ठ

प्रश्नमान
1. आपूर्तिक अभियुक्त वर्गीय लोगों द्वारा पंचायतां का अनुमोदन
2. पंचायतां पंचायतिक वार्ता द्वारा अनुमोदन
3. पंचायती भूमिका के संबंध में सीधा या मात्र मात्र द्वारा लिखित/प्राप्त

प्रश्न
1. मंत्रित्व विषय, मूल: का मार्केट मीडिया विशेष बिजनेस चैंबर एंट्रा 15 वर्ष, चेंडीगढ़,

2. वर्ग-विचार, मूल: का मार्केट मीडिया विशेष बिजनेस चैंबर एंट्रा 6 वर्ष,

प्रश्नशील अवदेश वीभ

1. मंत्रित्व विषय, मूल: का मार्केट मीडिया विशेष बिजनेस चैंबर एंट्रा 2 विचर 1

2. विशेष विचार विवरण: का मार्केट मीडिया विशेष बिजनेस चैंबर एंट्रा 3 विचर 1

3. विशेष विचार विवरण: का मार्केट मीडिया विशेष बिजनेस चैंबर एंट्रा 5 विचर

4. विशेष विचार विवरण: का मार्केट मीडिया विशेष बिजनेस चैंबर एंट्रा 8 विचर

5. केंद्र : मंत्रित्व, मार्केट मीडिया विशेष बिजनेस चैंबर का मार्केट मीडिया विशेष बिजनेस चैंबर (500 मीडिया विवरण)

6. केंद्र : मंत्रित्व, मार्केट मीडिया विशेष बिजनेस चैंबर एंट्रा 7

7. केंद्र : मंत्रित्व, मार्केट मीडिया विशेष बिजनेस चैंबर एंट्रा 8

विशेष नोट : मौलिक पाठ का लोग उठाकर दिख 6 पृष्ठ
6 credit course

SEMESTER I

HISTORY AND CULTURE OF PUNJAB FROM THE EARLIEST TIMES TO 1849

INSTRUCTIONS FOR THE PAPER–SETTER AND CANDIDATES :( FOR PAPER in semester 1 & 2)

1. The syllabus has been divided into four Units. There shall be 9 questions in all. The first question is compulsory and shall be short answer type containing 10 short questions spread over the whole syllabus to be answered in about 25 to 30 words each. The candidates are required to attempt any 5 short answer type questions carrying 5 marks i.e. 1 mark each. Rest of the paper shall contain 4 units. Each Unit shall have two essay type questions and the candidate shall be given internal choice of attempting one question from each Unit-IV in all. Each question will carry 10 marks.

2. For private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will proportionately be increased to maximum marks of the paper in lieu of internal assessment.
   **The paper-setter must put note (2) in the question paper.**

3. One question from Unit-IV shall be set on the map.

Explanation:
1. Each essay type question would cover about one-third or one-half of a topic detailed in the syllabus.
2. The distribution of marks for the map question would be as under:
   - Map : 6 Marks
   - Explanatory Note : 4 Marks

   In case a paper setter chooses to set a question of map on important historical places, the paper setter will be required to ask the students to mark 6 places on map of 1 mark each and write explanatory note on any two of 2 marks each.

3. The paper-setter would avoid repetition between different types of question within one question paper.

PAPER: HISTORY AND CULTURE OF PUNJAB FROM THE EARLIEST TIMES TO 1849

Max. Marks : 50
Theory : 45
Internal Assessment : 05
Time : 3 Hours

Objectives: To introduce the students to the history of Punjab region.

Pedagogy: Lectures, library work and discussions.
UNIT I

2. Vedic Age: socio-economic life; development of caste; position of women.
3. Religion: vedic religion; impact of Buddhism and Jainism on the region.

UNIT II

4. Society and Culture c. 1000 A.D.: Socio-economic life; religious life; education
5. Cultural Reorientation: main features of Bhakti; origin and development of Sufism

UNIT III

9. Institution of Khalsa: new baptism; significance

UNIT IV

11. Society and Culture under Maharaja Ranjit Singh: social mobility; painting and architecture; literature.

Suggested Readings:

5. Basham, A.L : The Wonder That was India, Rupa Books, Calcutta (18th rep.), 1992
6. Sharma, B.N : Life in Northern India, MunshiRam Manohar Lal, Delhi, 1966
7. Singh, Kirpal : History and Culture os the Punjab, Part II(Medieval Period), Publication Bureau, Punjabi University, Patiala 1990(3rd edn.).


Note: The following categories of the students shall be entitled to take option of History & Culture of Punjab in lieu of Punjabi as compulsory subject:

A. That the students who have not studied Punjabi upto class 10th.

B. Ward of / and Defence Personnel and Central Govt. Employee/Employees who are transferrable on all India basis.

C. Foreigners
Objectives: To provide basic mathematical foundation required for various computer science courses.

Note:
(i) The syllabus of this paper has been divided into four sections.
(ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi.
(iii) The students are required to attempt one question from each Section and the entire Compulsory question.
(iv) All questions carry equal marks, unless specified.
(v) The student can use only Non-programmable & Non-storage type of Calculator.

SECTION-A

1. Fundamental Principles of Counting:
   Concept of $c(n, r)$. Binomial Theorem: Statement only for positive index, general and middle terms. Binomial Theorem for any index (Without Proof) applications of Binomial Theorem for approximation and properties of Binomial Coefficients.

SECTION-B

2. Trigonometry-I:
   Trigonometric Ratios of allied angles, Trigonometric ratios of Compound angles or addition and subtraction formulae.

SECTION-C

3. Trigonometry-II:
   Transformation Formulae, Trigonometric ratios of multiple angles.

SECTION-D

4. Limit and Continuity:
   Rules for finding Limits, Infinite Limits, Continuity at a point, Rules of continuity, Continuity on an Interval.

References:
Objective: The objective of this course is to familiarize students with Fundamentals of Information Technology and its applications.

Note: (i) The syllabus of this paper has been divided into four sections.

(ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi.

(iii) The students are required to attempt one question from each Section and the entire Compulsory question.

(iv) All questions carry equal marks, unless specified.

(v) The student can use only Non-programmable & Non-storage type of Calculator.

SECTION – A

1. **Computer Appreciation**: Introduction, characteristics of computer; History of computers; classification of computers on size, architecture and chronology; Applications of computers; commonly used terms–Hardware, Software, Firmware. Types of software: System and Application software; Computer Architecture and organisation; Input, Process and Output; Representation of information: BIT, BYTE, Memory, Memory size; Units of measurement of storage; Input/Output devices; Secondary storage devices; Programming Languages: Generation of Languages; Translators - Interpreters, Compilers, Assemblers and their comparison. **DOS**: Booting sequence; Warm and Cold reboot; Concept of File and directory, Redirecting command input and output pipes, Wildcard characters, Types of DOS commands: Internal and External; Internal Commands: DIR, MD, CD, CLS, COPY, DATE, DEL, PATH, PROMPT, REN, RD, TIME, TYPE, VER, VOL; External Commands: XCOPY, ATTRIB, BACKUP, RESTORE, FIND, SYS, FORMAT, CHKDSK, DISKCOPY, LABEL, MOVE, TREE, DELTREE, DEFRAG, SCANDISK, UNDELETE. Batch Files: Introduction to simple batch files; Introduction to CONFIG.SYS and AUTOEXEC.BAT files.

   (No. of Periods : 15)


   Word Processing Package: Basics of Word Processing; Opening and Closing of documents; Text creation and Manipulation; Finding and replacing text, Printing of document, Formatting of text; Margin setting, Adding Borders and shading, Adding Headers and Footers, Setting up Multiple columns, Working with tables, Spell check, Grammar facility, Autotext, language setting and thesaurus; Mail merging. **Installation of Word Processing Software** .

   (No. of Periods : 15)
SECTION-C


Presentation Packages: Basics, General Features, Creating a presentation, Incorporation of Animation, Installation of Presentation software.

(No. of Periods : 15)

SECTION-D

4. Internet and WWW: Evolution of Internet, services provided on Internet, Access Methods, Future of Internet, Fundamentals of WWW, HTML: Introduction to HTML, Building blocks of HTML, lists, links, images, tables, frames, forms layers, HTML editor: Frontpage, Dreamweaver.

(No. of Periods : 15)

References:


Paper Code : BCA -105
Paper Title : Computer Lab.-1 Based on BCA - 104
Theory Marks : 90
# SECOND SEMESTER

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<tr>
<td>BCA - 201</td>
<td>English (Compulsory) - B</td>
<td>90</td>
<td>60</td>
<td>(45 minutes)</td>
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<tr>
<td>BCA - 202</td>
<td>Punjabi (Compulsory) - B</td>
<td>45</td>
<td>60</td>
<td>(45 minutes)</td>
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<tr>
<td>BCA - 202</td>
<td>HISTORY AND CULTURE OF PUNJAB - B</td>
<td>45</td>
<td>60</td>
<td>(45 minutes)</td>
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<tr>
<td>BCA - 203</td>
<td>Mathematics in Computer Science-II</td>
<td>90</td>
<td>60</td>
<td>(45 minutes)</td>
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ENIRONMENT AND ROAD SAFETY EDUCATION (SEMESTER – II)

Note: The syllabus has 15 topics to be covered in 25 hour lectures in total, with 2 lectures in each topic from 2 to 11 and one each for the topics 1 and 12 to 15.

1. Environment Concept:
   Introduction, concept of biosphere – lithosphere, hydrosphere, atmosphere; Natural resources – their need and types; Principles and scope of Ecology; concepts of ecosystem, population, community, biotic interactions, biomes, ecological succession.

2. Atmosphere:
   Parts of atmosphere, components of air; pollution, pollutants, their sources, permissible limits, risks and possible control measures.

3. Hydrosphere:
   Types of aquatic systems; Major sources (including ground water) and uses of water, problems of the hydrosphere, fresh water shortage; pollution and pollutants of water, permissible limits, risks and possible control measures.

4. Lithosphere:
   Earth crust, soil – a life support system, its texture, types, components, pollution and pollutants, reasons of soil erosion and possible control measures.

5. Forests:
   Concept of forests and plantations, types of vegetation and forests, factors governing vegetation, role of trees and forests in environment, various forestry programmes of the Govt. of India, Urban Forests, Chipko Andolan.

6. Conservation of Environment:
   The concepts of conservation and sustainable development, why to conserve, aims and objectives of conservation, policies of conservation; conservation of life support systems – soil, water, air, wildlife, forests.

7. Management of Solid Waste:
   Merits and demerits of different ways of solid waste management– open dumping, landfill, incineration, resource reduction, recycling and reuse, vermicomposting and vermiculture, organic farming.

8. Indoor Environment:
   Pollutants and contaminants of the in-house environment; problems of the environment linked to urban and rural lifestyles; possible adulterants of the food; uses and harms of plastics and polythene; hazardous chemicals, solvents and cosmetics.

9. Global Environmental Issues:
   Global concern, creation of UNEP; Conventions on climate change, Convention on biodiversity; Stratospheric ozone depletion, dangers associated and possible solutions.

10. Indian Laws on Environment:
    Indian laws pertaining to Environmental protection: Environment (Protection) Act, 1986; General information about laws relating to control of air, water and noise pollution. What to do to seek redressal.

11. Biodiversity:
    What is biodiversity, levels and types of biodiversity, importance of biodiversity, causes of its loss, how to check its loss; Hotspot zones of the world and India, Biodiversity Act, 2002.

12. Noise and Microbial Pollution:
    Pollution due to noise and microbes and their effects.
13. Human Population and Environment:

14. Social Issues:
Environmental Ethics: Issues and possible solutions, problems related to lifestyle, sustainable development; Consumerisms and waste generation.

15. Local Environmental Issues:
Environmental problems in rural and urban areas. Problem of Congress Grass & other weeds, problems arising from the use of pesticides and weedicides, smoking etc.

Practical
Depending on the available facility in the college, a visit to vermicomposting units or any other such non-polluting eco-friendly site or planting/caring of vegetation/trees could be taken.

Examination Pattern:
A qualifying paper of 50 marks comprising of fifty multiple choice questions (with one correct and three incorrect alternatives and no deduction for wrong answer or un-attempted question), and of 1 hour duration.

The students have to obtain 33% marks to qualify the paper. The marks are not added / included in the final mark sheet.

UNIT II (ROAD SAFETY)

1. Concept and Significance of Road Safety.
2. Role of Traffic Police in Road Safety.
3. Traffic Engineering – Concept & Significance.
5. How to obtain Driving License.
7. Common Driving mistakes.
8. Significance of First-aid in Road Safety.
9. Role of Civil Society in Road Safety.

Note: Examination Pattern:
- The Environment and Road Safety paper is 70 marks.
- Seventy multiple choice questions (with one correct and three incorrect alternatives and no deduction for wrong or un-attempted questions).
- The paper shall have two units: Unit I (Environment) and Unit II (Road Safety).
- Unit II shall comprise of 20 questions with minimum of 1 question from each topics 1 to 10.
- The entire syllabus of Unit II is to be covered in 10 hours.
- All the questions are to be attempted.
- Qualifying Marks 33 per cent i.e. 23 marks out of 70.
- Duration of examination: 90 minutes.
- The paper setter is requested to set the questions strictly according to the syllabus.

Suggested Readings
2. Road Safety Signage and Signs (2011), Ministry of Road Transport and Highways, Government of India.

Websites:
(a) www.chandigarhpolice.nic.in
(b) www.punjabpolice.gov.in
(c) www.haryanapolice.gov.in
(d) www.hppolice.nic.in
Outlines of Test, Syllabi and Courses of Reading for BCA, First Year (English Compulsory) Examination 2015-2016

M.Marks: 100
Theory:  90
Int.Assess:10

Semester II

Book Prescribed: Colour of Expression by Harbhajan Singh published by Publication Bureau, Panjab University, Chandigarh

Section A

1) **Short Stories (3-5)**
   
   One essay type question on summary/Character/Incident
   (one out of two with internal choice)                     15 marks

2) **Prose (4-5)**
   
   Long essay type question on Summary/Theme
   (one out of two with internal choice)                  15 marks

3) **Poetry (7-11) 15 marks**
   
   Summary (one out of two with internal choice)         5 marks

   Short Questions (two out of three)                    5 marks

   Reference to the Context(one out of two with internal choice) 5 marks

Section B

1) **Paragraph Writing(Descriptive and Narrative)** 10 marks

2). **Use of textual words and idioms in sentences**
   (5 out of 8)                                          10 marks

3). **Translation from Hindi/Punjabi to English**
   (isolated sentences)
   
   OR
   
   For Foreign Students (Paraphrase of Poetry Passage) 10 marks

4) **Transformation of all types (15 out of 15 )** 15 marks
पंचायत समिति - श्री.मो.ए. डा. प्लास्का
मधेसदी तहसील
अगस्त /सितंबर 2016 के निभावार समीक्षा

वेळा अंक : 50
खिलौना : 45
निर्देशन अभिप्रेत: 05
संख्या: 3 पाँटे

मिलितवाद

1. आपूर्तिक पंचायत वड़ीमैं दीवा चेतरबाहां वाडिउट मा अभिप्रेत
2. चेतरबाहां पंचायत वडिटीमैं ला अभिप्रेत
3. चेतरबाहां पंचायत संघमा रा संख्या सीडिर दे कार्य/संगठन

वेलम

1. मुख-मंडितमा, संख्या: डा.मोहन सिंघ विचे चेतरबाहां 15 वाडिउटमा, पुलिस: पंचायत पुलिसवाहिकी पक्किमलिमिट विचित्र, चंडीगढ़
(कोटभविन मंडल- पंचायत, कार्य, शासन दोहरे- डा. विनो, सुभूम विनो, प्रेम मिथु, गंगा मैल, वेलभूमि ज्ञान त्रिशा, बिवाद, वसा- फिलिप, भाटी सहरसा, मधी जागीर भाटी, र्षिं, पुलिस वडिटीमा- मधी जागीर भाटी, नामक (बेही छालीमा 'चं') अभे नामक (अन्धे मूलक विवाद के) वाडिउटमा)

2. पंचायत वड़ा-वाडिउटमा, संख्या: तारिक वाहिन सिंह विचे चेतरबाहां 6 वाडिउटमा, पुलिस: पंचायत पुलिसवाहिकी, पक्किमलिमिट विचित्र, चंडीगढ़
(तारिक वड़ा, ब्रह्म, नाथ मध्य-मंडल दे, नेवी वीचाररु, सिंह मनम विवाद दे अभे पुलिसमा वटाहिकी)

प्रतिवाद अभे वीज

1. मुख-मंडितमा पुलिस विचे भूमरा मिजुट विहितविभाग (2 विचे 1) 5 अंबे
2. विषम विभिन वाडिउट दा मात्र मा वेनरी वाह (4 विचे 1) 5 अंबे
3. गंगा वानी दा मात्र (पंचायत वड़ा-वाडिउट विचे) 5 अंबे
4. गंगा वानी वहाँ मा वाडिउटमा दा मात्र, तीर अभे विभिन विभाग (विभिन वानी, वहाँ, पुलिस राज्य, तारिक वाहिन सिंह, तारिक वाहिन दा विभिन विभाग (मिजुट मिजुट) (2 विचे 1, विभिन वहाँ मा विभिन वाडिउटमा विचे)
5. वर्तमान काहे मध्यस्थ पेट्रेंट (2 विचे 1) 8 अंबे
6. साथाती विधिविधान (2 विचे 1) 7 अंबे
7. विमलम विचे

विभिन वेव : मध्यम पाठ बाँध स्थान उड़के विचे 6 वीचा वाह
SEMESTER II

HISTORY AND CULTURE OF PUNJAB IN THE COLONIAL AND POST INDEPENDENCE TIMES

INSTRUCTIONS FOR THE PAPER –SETTER AND CANDIDATES: (FOR PAPER in semester 1 AND 2)

1. The syllabus has been divided into four Units. There shall be 9 questions in all. The first question is compulsory and shall be short answer type containing 10 short questions spread over the whole syllabus to be answered in about 25 to 30 words each. The candidates are required to attempt any 5 short answer type questions carrying 5 marks i.e. 1 mark each. Rest of the paper shall contain 4 units. Each Unit shall have two essay type questions and the candidate shall be given internal choice of attempting one question from each Unit-IV in all. Each question will carry 10 marks.

2. For private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will proportionately be increased to maximum marks of the paper in lieu of internal assessment.

The paper-setter must put note (2) in the question paper.

3. One question from Unit-IV shall be set on the map.

Explanation:

1. Each essay type question would cover about one-third or one-half of a topic detailed in the syllabus.

2. The distribution of marks for the map question would be as under:

   Map : 6 Marks
   Explanatory Note : 4 Marks

   In case a paper setter chooses to set a question of map on important historical places, the paper setter will be required to ask the students to mark 6 places on map of 1 mark each and write explanatory note on any two of 2 marks each.

3. The paper-setter would avoid repetition between different types of question within one question paper.

PAPER: HISTORY AND CULTURE OF PUNJAB IN THE COLONIAL AND POST INDEPENDENCE TIMES

Max. Marks : 50
Theory : 45
Internal Assessment : 05
Time : 3 Hours

Objectives: To introduce the students to the history of Punjab region in modern times.
Pedagogy: Lectures, library work and discussions.

UNIT I

1. Introduction of Colonial Rule: administrative changes; means of communication; western education.
2. Agrarian Development: Commercialization of agriculture; canalization and colonization.
3. Social Classes: agrarian groups; new middle classes

UNIT II

5. Socio Religious Reform Movements: activities of Arya Samaj; Singh sabhas; Ahmadiyas.
6. Development of Press & literature: growth of press; development in literature

UNIT III

7. Emergence Of Political Consciousness: Agrarian uprising 1907; Ghadar.
8. Gurudwara Reform Movement: Jallianwala Bagh; foundation of SGPC and Akali Dal; Morchas.
9. Struggle for Freedom: activities of revolutionaries - Babbar Akalis, Naujawan Bharat Sabha; participation in mass movements – non co-operation, civil disobedience, Quit India.

UNIT IV

10. Partition and its Aftermath: resettlement; rehabilitation
12. MAP: Major Historical places: Delhi, Kurukshetra, Jaito, Ferozepur, Ambala, Amritsar, Lahore, Ludhiana, Qadian, Jalandhar, Lyallpur, Montgomery.

Suggested Readings:

1. Singh, Kirpal :History and Culture os the Punjab, Part II(Medieval Period), Publication Bureau, Punjabi University, Patiala 1990(3rd edn.).
Objectives: To provide basic mathematical foundation required for various computer science courses.

Note:
(i) The syllabus of this paper has been divided into four sections.
(ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi.
(iii) The students are required to attempt one question from each Section and the entire Compulsory question.
(iv) All questions carry equal marks, unless specified.
(v) The student can use only Non-programmable & Non-storage type Calculator.

SECTION-A
1. Derivatives:
The derivative of a function, Calculating derivatives from the definition, Differentiability on an interval, Differentiation Rules, Rates of Change, Derivatives of Trigonometric Functions, The Chain Rule, Derivative of Implicit, Rational and Exponential Functions, Rolle’s theorem, Lagrange Mean Value Theorem.

SECTION-B
2. Integration-I:
Indefinite Integrals, Integration by substitution, Integration of Transcendental Functions: Inverse Functions, Natural Logarithm, The Exponential Function.

SECTION-C
3. Integration-II:
Integration by parts, Definite Integrals, Properties, Area under the curve.

SECTION-D
4. Matrix Operations:
Introduction and definition of matrix, types of matrices, Matrix addition, Subtraction and scalar multiplication, Matrix multiplication, Transpose of a matrix, adjoint of a matrix and inverse of a matrix, solution of system of linear equations, definition and properties of a determinant.

References:
Objectives: The objective of this course is to make the student understand programming language concepts, mainly control structures, reading a set of data, stepwise refinement, function and arrays. After completion of this course, the student is expected to analyze the real life problem and write programs in ‘C’ language to solve problems. The main emphasis of the course is on problem solving aspect.

Note: (i) The syllabus of this paper has been divided into four sections.

(ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi.

(iii) The students are required to attempt one question from each Section and the entire Compulsory question.

(iv) All questions carry equal marks, unless specified.

(v) **The student can use only Non-programmable & Non-storage type Calculator.**

SECTION-A


   (No. of Periods : 15)

SECTION-B


   (No. of Periods : 15)

SECTION-C

3. **Arrays:** Introduction to Arrays, Array Declaration, Single and Multidimensional Array, Memory Representation. Structure and Union: Declaration of structure, Accessing structure members, Structure Initialization, Arrays of structure, nested structures, Unions.

   (No. of Periods : 15)

SECTION-D

4. **String:** Introduction of string, declaring and initializing string variables, reading and writing strings, string handling functions. Pointers: Introduction to Pointers, Address operator and pointers, Declaring and Initializing pointers, Assignment through pointers, Pointers and Arrays. Files: Introduction, Creating a data file, opening and closing a data file, processing a data file.

   (No. of Periods : 15)
References:

2. Salaria, R. S. : Test Your Skills in C, Khanna Book Publishing Ltd.,
3. Salaria, R.S. : Problem Solving And Programming in C, Khanna

Paper Code : BCA - 205
Paper Title : Computer Lab.-2 Based on BCA - 204
Theory Marks : 90
Objective: Discuss the basic techniques in Numerical Methods

Note:

(i) The syllabus of this paper has been divided into four sections.

(ii) Examiner will set total nine questions comprising two questions from each section and one compulsory question of short answer type covering whole syllabi.

(iii) The students are required to attempt one question from each section and the entire compulsory question.

(iv) All questions carry equal marks, unless specified.

(v) The student can use only Non-programmable & Non-storage type Calculator.

(vi) Note: Log table may be provided

SECTION-A

1. Computer Arithmetic:
   Floating Point Numbers, operations, normalizations and their consequences, Errors and its types.

2. Iterative Methods:

   (No. of Periods: 15)

SECTION-B

3. Simultaneous Linear Equations: Solution of Simultaneous Linear Equations Using Gauss - Elimination, Gauss-Jordan and Gauss-Seidal Methods, Concept of Pivoting.


   (No. of Periods: 15)

SECTION-C

5. Measures of Central Tendency:
   Preparing Frequency distribution table, Arithmetic mean, Geometric mean, Harmonic mean, Median and Mode.

6. Measures of Dispersion, Skewness and Kurtosis, Range:
   Mean deviation, Standard deviation, Coefficient of variation, Moments, Skewness and Kurtosis. Development of Programs for above Statistical Methods using C

   (No. of Periods: 15)
SECTION-D

7. **Correlation and Regression Analysis**:
   Least square fit; Polynomial and curve fittings; Linear regression and non linear regression algorithms.

   
   (No. of Periods : 15)

**References**:

Objectives: The basic algorithms related to handling data like stack, lists, queue, trees and graphs are introduced in this subject. The implementation of these algorithms will be discussed using C programming language.

Note: (i) The syllabus of this paper has been divided into four sections.
(ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi.
(iii) The students are required to attempt one question from each Section and the entire Compulsory question.
(iv) All questions carry equal marks, unless specified.
(v) The student can use only Non-programmable & Non-storage type Calculator.

SECTION-A
(No. of Periods : 15)

SECTION-B
2. Linked List: Operations:-traversing, searching, inserting, deleting, operations on header linked list, circular linked list, doubly linked list, memory representation, Applications, polynomial manipulation.
( No. of Periods : 15)

SECTION-C
3. Trees – Definition and Basic concepts, Representation in Contiguous Storage, Binary Tree, Binary Tree Traversal, Searching, Insertion and deletion in Binary trees, Binary Search tree, AVL trees.
(No. of Periods : 15)

SECTION-D
(No. of Periods : 15)
References:

Objectives: This course will help students to understand object oriented programming concepts and implement them for real life problems using C++ programming language features.

Note:
(i) The syllabus of this paper has been divided into four sections.
(ii) Examiner will set total nine questions comprising two questions from each section and one compulsory question of short answer type covering whole syllabi.
(iii) The students are required to attempt one question from each section and the entire Compulsory question.
(iv) All questions carry equal marks, unless specified.
(v) The student can use only Non-programmable & Non-storage type Calculator.

SECTION-A
1. Concepts of Object Oriented Programming (OOP): Introduction to OOP, Difference between OOP and Procedure Oriented Programming, Object, Class, Encapsulation, Abstraction, Polymorphism, Inheritance. Structure of a C++ Program and I/O streams. Classes and Objects, Class Declaration: Data Members, Member Functions, Private and Public members, Creating Objects, Accessing class data members, Accessing member functions Class Function Definition: Member Function definition inside the class declaration and outside the class declaration, friend function, inline function, static function.

SECTION-B

SECTION-C
3. Inheritance - Concept of inheritance, Base class, Defining derived classes, Visibility modes: Public, Private, Protected; Single inheritance: Privately derived, Publicly derived; Making a protected member inheritable, Access Control to private and protected members by member functions of a derived class, Multilevel inheritance, Nesting of classes.

4. Polymorphism: Definition, Application and demonstration of Data Abstraction, Encapsulation and Polymorphism. Early Binding, Polymorphism with pointers, Virtual Functions, Late binding, pure virtual-functions
SECTION D

5. Templates: Function Template, class template
   Exception Handling: using try, throw and catch statements

   (No. of Periods :15)

References:


Paper Code : BCA-304
Paper Title : Computer Lab.-1: Based on BCA-301, BCA-302 and BCA-303
Marks : 50
FOURTH SEMESTER

Paper Code : BCA -401
Paper Title : Project Management and System Development
Theory Marks : 90
Number of Lectures: 60
(45 minutes duration)

Objectives: To explain the need for project management, role of project managers in organizational environments. Further the course aims to describe the systems development cycle.

Note:
(i) The syllabus of this paper has been divided into four sections.
(ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi.
(iii) The students are required to attempt one question from each Section and the entire Compulsory question.
(iv) All questions carry equal marks, unless specified.
(v) The student can use only Non-programmable & Non-storage type Calculator.

SECTION-A


(Total No. of Periods – 15)

SECTION-B


(Total No. of Periods – 15)

SECTION-C


(Total No. of Periods – 15)
SECTION – D


Project Management Software Tools : Features, Different components of both licensed and Open Source Software.

(Total No. of Periods – 15)

References :


Objectives: This course aims at giving the students the insight of Client Server Computing and Creating Applications using the Oracle.

Note:  
(i) The syllabus of this paper has been divided into four sections.
(ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi.
(iii) The students are required to attempt one question from each Section and the entire Compulsory question.
(iv) All questions carry equal marks, unless specified.
(v) The student can use only Non-programmable & Non-storage type Calculator.

SECTION-A

1. Introduction to DBMS, Advantages and disadvantages of DBMS, introduction to RDBMS, Codd's Rule for RDBMS, Difference between DBMS and RDBMS.
   Normalization. Data Models and their types (Hierarchical, Networking, Relational).
   Introduction to SQL *Plus : Introduction to SQL, Oracle Data types, Starting SQL *Plus, Data Manipulation and Control-I : Data Definition Language (DDL), Creating Tables, Creating a Table with data from another table, Inserting Values into a Table, Updating Column(s) of a Table, Deleting Row(s) from a Table, Dropping a Column, Querying database tables, Conditional retrieval of rows, Working with Null Values, Matching a pattern from a table, Ordering the Result of a Query, Aggregate Functions, Grouping the Result of a Query, ROLLUP Operation: Getting Sub Totals, CUBE Operation : Getting Cross Tabs, Command Summary of SQL *Plus Editor.
   (No. of Periods : 15)

SECTION-B

2. Functions : Arithmetic Functions, Character Functions, Date Functions, General Functions; Group Functions. Introduction to VIEWs, Manipulating the Base table(s) through VIEWs, Rules of DML Statements on Join Views, Dropping a VIEW, Inline Views, Materialized Views. Querying Multiple Tables : Collating Information: Equi Joins, Cartesian Joins, Outer Joins, Self Joins. ;Set Operator : Union, Intersect, Minus; Nested Queries. Data Manipulation and Control-II : Database Security and Privileges, GRANT Command, REVOKE Command, Application Privileges Management, Enhancing Performance, Sequences, Maintaining Database Objects, COMMIT and ROLLBACK.
   (No. of Periods : 15)

SECTION-C

   (No. of Periods : 15)
SECTION-D

4. PL/SQL-II: Cursor Management in PL/SQL, Cursor Manipulation, Implicit Cursor Attributes, Exception Handling in PL/SQL; Predefined Exceptions, User Defined Exceptions.


(No. of Periods : 15)

References:


Objective: To introduce UNIX environment, Edit and manage files and user-level security for UNIX development, Use standard UNIX development tools for C or C++.

Note: (i) The syllabus of this paper has been divided into four sections.

(ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi.

(iii) The students are required to attempt one question from each Section and the entire Compulsory question.

(iv) All questions carry equal marks, unless specified.

(v) The student can use only Non-programmable & Non-storage type Calculator.

SECTION-A


Structure of UNIX: Kernel, Shell. UNIX Directory system

(No. of Periods : 15)

SECTION-B


(No. of Periods : 15)

SECTION-C

3. Administering UNIX System: Introduction to System Administration, Functional activities of System Administration - Starting up the system, Maintaining the Super User Login, Shutting down the system, recovering from system crash, Taking backups, Managing disk space, Mounting and Un-mounting file system, Adding and removing users, Changing groups and password, Maintaining security, Monitoring system activity, Accounting of system usage and billing, Setting up remote communication, Installing printers and peripheral devices.

(No. of Periods : 15)
SECTION - D

4. Shell Programming: Executing a shell program, Study of shell programming as a Language; Wild card characters, Type of statements and Reserved Words, Special Shell parameters. The AWK pattern scanning and processing language: Operators, Control Statements and arrays. String Handling programs (String comparison, substring, string splitting) using AWK:UNIX and Networking: Network Troubleshooting(Commandping, ipconfig, nslookup, traceroot).Introduction to IP addresses and classes.

(No. of Periods : 15)

References:


Paper Code : BCA-404
Paper Title : Computer Lab.-2: Based on BCA - 402 and BCA - 403
Marks : 50
SYLLABUS AND COURSES OF READING FOR BACHELOR OF COMPUTER APPLICATIONS
FOR THE EXAMINATION OF 2015

THIRD YEAR

Paper Code : BCA-17
Paper Title : Entrepreneurship Development Programme
Theory Marks : 90
Number of Lectures : 100
(45 minutes duration)

Objectives : EDPs aim at training in entrepreneurial traits so that students obtain adequate information, motivation and guidance in setting up their own enterprises. In order to maintain a homogeneous nature of participating groups, EDPs focus on rural entrepreneurs, women, SC/ST, minority communities etc.

Note : (i) The syllabus of this paper has been divided into four sections.

(ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi.

(iii) The students are required to attempt one question from each Section and the entire Compulsory question.

(iv) All questions carry equal marks, unless specified.

SECTION-A
1. Project Formulation : Need, Scope and approaches for project formulation; structure of project report; study and analysis of sample project report; preparation of a project report; Techno-economic feasibility of the project.

(No. of Periods : 25)

SECTION-B
2. Finance & Accounting : Working capital assessment, its management & exercise thereon; Assessment of fixed capital and exercise thereon; Capital budgeting; Product costing and cost consciousness. Financial ratios and their significance; Break-even analysis; Credit institutions and financing procedures; Books of accounts, financial statements & fund flow analysis.

(No. of Periods : 25)

SECTION-C
3. Managing the Enterprise : Resource management – men, material, money and machines; Personnel management, Office management.


(No. of Periods : 25)

SECTION-D

(No. of Periods : 25)
References:


SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS

Paper Code : BCA-18
Paper Title : Data Communication & Networks
Theory Marks : 90
Number of Lectures : 100 (45 minutes duration)

Objectives : As part of this course, students will be introduced to computer networks and data communication paradigms, about network models and standards, network protocols and their use, wireless technologies.

Note : (i) The syllabus of this paper has been divided into four sections.
(ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi.
(iii) The students are required to attempt one question from each Section and the entire Compulsory question.
(iv) All questions carry equal marks, unless specified.

SECTION-A


   (No. of Periods : 25)

SECTION-B

   (No. of Periods : 25)

SECTION-C

   (No. of Periods : 25)

SECTION-D

   (No. of Periods : 25)

References :

SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS

Paper Code : BCA-19
Paper Title : Computer Graphics and Multimedia Applications
Theory Marks : 90

Number of Lectures : 100
(45 minutes duration)

Objectives :

- To study the graphics techniques and algorithms.
- To study the multimedia concepts and various I/O technologies.
- To enable the students to develop their creativity.

Note : (i) The syllabus of this paper has been divided into four sections.
(ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi.
(iii) The students are required to attempt one question from each Section and the entire Compulsory question.
(iv) All questions carry equal marks, unless specified.

SECTION-A

Computer Graphics :
1. A Survey of Computer Graphics :
   (No. of Periods : 15)
2. Overview of Graphics Systems :
   (No. of Periods : 10)

SECTION-B

   (No. of Periods : 10)
   Use the above primitives to develop programs like drawing concentric circles, Ellipses, Sine curves, Histograms, Pie charts and human face.
   (No. of Periods : 15)

SECTION-C

Multimedia Applications :
   (No. of Periods : 25)

SECTION-D

7. Applications :
8. Studying features and use of Multimedia Image Processing authoring tools like photo shop,
### References:


.............................................................................................................
Paper Code : BCA-20
Paper Title : Internet Programming
Theory Marks : 90
Number of Lectures : 100
(45 minutes duration)

Objectives :

• Explain JAVA and HTML tools for Internet programming.
• Describe scripting languages – Java Script.
• Explain dynamic HTML programming.
• Explain Server Side Programming tools.

Note :
(i) The syllabus of this paper has been divided into four sections.
(ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi.
(iii) The students are required to attempt one question from each Section and the entire Compulsory question.
(iv) All questions carry equal marks, unless specified.

SECTION-A

1. Review of forms in HTML, Java Script: Features, tokens, data types, variables, operations, control structures strings arrays, functions, core language, objects, client side objects, event handling. Applications related to client side form validation.

(No. of Periods : 25)

SECTION-B

2. Fundamentals of Java: Java Vs. C++, Byte lode, Java virtual machine, constants, variables, data types, operators, expressions, control structures, defining class, creating objects, accessing class members, constructions, method overloading.

(No. of Periods : 25)

SECTION-C

3. Inheritance : Basics, member access, using super to call super class constructors, creating a multi level hierarchy, method overriding, dynamic method dispatch, using abstract classes, using Final.

Packages and Interfaces: Defining a package, understanding CLASSPATH, Access protection : Importing packages, Interfaces, Defining an Interface, Implementing Interfaces, Applying Interfaces, Variables in Interfaces.

Exception Handling: Fundamentals, Exception types, Using Try and Catch, Multiple Try and Catch clauses, Nested Try statements, Built–in exceptions.

(No. of Periods : 25)
SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS

SECTION-D


I/O Applets : I/O Basics : Streams, The predefined streams; Reading console I/P, Writing console O/P. The print writer class; Reading and Writing files, Applet fundamentals, Using AWT controls, Layout Managers and Menus, String handling and event handling.

(No. of Periods : 25)

References :

SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS

Paper Code : BCA-27
Paper Title : Discrete Mathematics
Theory Marks : 90
Number of Lectures : 100
(45 minutes duration)

Objectives : Logic, Relations and Functions, Algebraic Functions and Graph Theory will be introduced in this course.

Note : (i) The syllabus of this paper has been divided into four sections.
(ii) Examiner will set total nine questions comprising two questions from each Section and one compulsory question of short answer type covering whole syllabi.
(iii) The students are required to attempt one question from each Section and the entire Compulsory question.
(iv) All questions carry equal marks, unless specified.

SECTION-A
1. Set Theory : Relations and Functions : Set Notation and Description, subset, basic set operations, Venn Diagrams, laws of set theory, partitions of sets, min sets, duality principle, basic definitions of relations and functions, graphics of relations, properties of relations: injective, surjective and bijective functions, compositions.

SECTION-B
3. Graph Theory : Graph and planar graphs – Basic Terminology, Multi-graphs, Weighted Graphs, Paths and Circuits, Shortest Paths, Eulerian Paths and Circuits. Travelling Salesman Problem, Planar Graphs.

SECTION-C

SECTION-D

7. Algebra of Logic : Proposition of logic operations, truth tables and propositions generated by set, equivalence and implication laws of logic, mathematical system, propositions over a universe, mathematical induction, quantifiers.
References:


BCA : 21 PROJECT and SEMINAR

Project and Seminar must be taken up from the real life problems. Marks for these are to be given on the basis of Programming Style, User friendly I/O, on-line help and documentation (user Manual). This work will carry 100 marks, (85 Marks for Project and Seminar Viva; and 15 Marks for Internal Assessment).

- Paper Code: BCA-23
- Paper Title: Computer Lab.-1 : Based on BCA-19
- Theory Marks: 90

- Paper Code: BCA-24
- Paper Title: Computer Lab.-2 : Based on BCA-20
- Theory Marks: 90

Published by: Professor A.K. Bhandari, Registrar, Panjab University, Chandigarh.