FACULTY OF SCIENCE

SYLLABI

FOR

Bachelor of Computer Applications
First, Second & Third Year
Examinations, 2014

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GUIDELINES REGARDING CONTINUOUS ASSESSMENT FOR REGULAR STUDENTS OF B.A./B.SC./B.COM./B.C.A. COURSES

IMPORTANT NOTE

(i) In order to incorporate an element of continuous assessment of students, the Colleges will conduct two mandatory House Tests in theory papers – one in the month of September/October and the other in December/January every year.

(ii) (a) For September Test, there will be only one paper of one hour’s duration in each subject, and for December Test, there will be paper/s on the pattern of annual examination conducted by the University.

There will be a Special Test for those students who could not fulfil the conditions of eligibility. It will not be held to provide an opportunity to all students to improve their earlier score. Those students who are exempted by the Principal of the College from appearing in the House Test/s in September and/or December/January will also be allowed to appear in the Special Test; this Test will determine their eligibility for admission to the examination as well as their score for Internal Assessment.

(b) With a view to meet the grievance of students, if any, on account of scores obtained by them, the answer-books will be shown to them. Difference of opinion on the issue, if any, will be sorted out with the help of respective Heads of departments as well as the Principal of the College.

(iii) Whereas the September House Test will carry weightage of 40 per cent, the December House Test will have weightage of 60 per cent in each subject/paper. The total weightage for both the Tests taken together shall be 10 per cent of the total marks in each theory subject/paper. The weightage of 10 per cent marks shall be added to each paper of B.A./B.Sc./B.Com./B.C.A. I, II and III Year which will, henceforth, carry weightage of only 90% marks as against 100% marks at present. A candidate will have to pass in theory and practical/s separately. For private candidates and students of the University School of Open Learning, the question paper shall, as usual, have weightage of 100% marks each.

(iv) The record of marks secured by the students in the two House Tests will be sent by the respective Colleges so as to reach the office of Controller of Examinations latest by 15th March, failing which the result of the students shall be shown as ‘RLA’ and the entire responsibility for this would lie with the Principal/s of the College/s.

(v) The Colleges will continue to forward the internal assessment of the students for Practicals, Projects and similar other activities, wherever applicable, to the Controller of Examinations, as usual, so as to reach this office latest by 15th March.
SPECIAL NOTE:

(i) Each theory question paper will be set out of the marks allotted to each theory paper and 10% marks of the maximum marks of each paper will be internal assessment.

(ii) 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.

(iii) It will not be mandatory for the students to separately pass in the internal assessment.
### Scheme of Examination, 2014

#### FIRST YEAR

<table>
<thead>
<tr>
<th></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. English (C)</td>
<td>4</td>
<td>90</td>
<td>10</td>
<td>3</td>
<td>BCA-01</td>
</tr>
<tr>
<td>2. Panjabi/History &amp; Culture of Punjab</td>
<td>4</td>
<td>90</td>
<td>10</td>
<td>3</td>
<td>BCA-02</td>
</tr>
<tr>
<td>3. <em>Environment &amp; Road Safety Education</em></td>
<td></td>
<td>70</td>
<td></td>
<td>1½</td>
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<tr>
<td>4. Mathematics</td>
<td>5</td>
<td>90</td>
<td>10</td>
<td>3</td>
<td>BCA-03</td>
</tr>
<tr>
<td>5. Personal Computing Software</td>
<td>5</td>
<td>90</td>
<td>10</td>
<td>3</td>
<td>BCA-04</td>
</tr>
<tr>
<td>6. Computer Organisation &amp; System Maintenance</td>
<td>5</td>
<td>90</td>
<td>10</td>
<td>3</td>
<td>BCA-05</td>
</tr>
<tr>
<td>7. Computer Programming &amp; Problem Solving Through “C”</td>
<td>5</td>
<td>90</td>
<td>10</td>
<td>3</td>
<td>BCA-06</td>
</tr>
<tr>
<td>8. Computer Lab.1: Based on BCA-04</td>
<td>6</td>
<td>90</td>
<td>10</td>
<td>4</td>
<td>BCA-07</td>
</tr>
<tr>
<td>9. Computer Lab.2: Based on BCA-06</td>
<td>6</td>
<td>90</td>
<td>10</td>
<td>4</td>
<td>BCA-08</td>
</tr>
</tbody>
</table>

#### SECOND YEAR

<table>
<thead>
<tr>
<th></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. Project Management &amp; System Development</td>
<td>4</td>
<td>90</td>
<td>10</td>
<td>3</td>
<td>BCA-09</td>
</tr>
<tr>
<td>2. Computer Based Numerical &amp; Statistical Methods (Using C)</td>
<td>4</td>
<td>90</td>
<td>10</td>
<td>3</td>
<td>BCA-10</td>
</tr>
<tr>
<td>3. Data Structure Using C</td>
<td>5</td>
<td>90</td>
<td>10</td>
<td>3</td>
<td>BCA-25</td>
</tr>
<tr>
<td>4. Client Server Computing using ORACLE</td>
<td>5</td>
<td>90</td>
<td>10</td>
<td>3</td>
<td>BCA-12</td>
</tr>
<tr>
<td>5. Object Oriented Programming (Using C++)</td>
<td>5</td>
<td>90</td>
<td>10</td>
<td>3</td>
<td>BCA-13</td>
</tr>
<tr>
<td>6. Unix Operating System</td>
<td>5</td>
<td>90</td>
<td>10</td>
<td>3</td>
<td>BCA-14</td>
</tr>
<tr>
<td>7. Computer Lab.1: Based on BCA-12 and BCA-14</td>
<td>6</td>
<td>90</td>
<td>10</td>
<td>4</td>
<td>BCA-15</td>
</tr>
<tr>
<td>8. Computer Lab.2: Based on BCA-13 and BCA-25</td>
<td>6</td>
<td>90</td>
<td>10</td>
<td>4</td>
<td>BCA-16</td>
</tr>
</tbody>
</table>

* This is a compulsory qualifying paper, which the students have to study in the B.A./B.Sc./B.Com./B.C.A.1 st year. The students are required to qualify this paper either in the first year, second year and third year of the course. The examination will be conducted by the University.
## Third Year

1. **Enterpreneurship Development Programme**  
   - 4 credits  
   - 90 contact hours  
   - 10 laboratory hours  
   - 3 theory credits  
   - **BCA-17**

2. **Data Communication & Networks**  
   - 5 credits  
   - 90 contact hours  
   - 10 laboratory hours  
   - 3 theory credits  
   - **BCA-18**

3. **Computer Graphics & Multimedia Applications**  
   - 5 credits  
   - 90 contact hours  
   - 10 laboratory hours  
   - 3 theory credits  
   - **BCA-19**

4. **Internet Programming**  
   - 5 credits  
   - 90 contact hours  
   - 10 laboratory hours  
   - 3 theory credits  
   - **BCA-20**

5. **Discrete Mathematics**  
   - 5 credits  
   - 90 contact hours  
   - 10 laboratory hours  
   - 3 theory credits  
   - **BCA-27**

6. **Project and Seminar**  
   - 6 credits  
   - 85 contact hours  
   - 15 laboratory hours  
   - **BCA-21**

7. **Computer Lab.1: Based on BCA-19**  
   - 5 credits  
   - 90 contact hours  
   - 10 laboratory hours  
   - 4 theory credits  
   - **BCA-23**

8. **Computer Lab.2: Based on BCA-20**  
   - 5 credits  
   - 90 contact hours  
   - 10 laboratory hours  
   - 4 theory credits  
   - **BCA-24**
FIRST YEAR

BCA-01 : ENGLISH  (Compulsory)

Outlines of Tests, Syllabi and Courses of Reading

Max. Marks : 100
Theory       : 90 marks
Internal Assessment : 10 marks
Time         : 3 Hours

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

SECTION-A

(i)  Story :
One essay type question on Summary/Character/Incident (one out of two with internal choice)  15 marks

(ii) Prose :
Long essay type question on Summary/Theme (one out of two with internal choice)  15 marks

(iii) Poetry :
Summary (one out of two with internal choice) : 05 marks
Central Idea --do-- : 05 marks
Reference to the Context --do-- : 05 marks

SECTION-B

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

(ii) Use of textual words and idioms in sentences (5 out of 8)  05 marks

(iii) Translation from English to M.I.L.
\begin{itemize}
  \item OR
  \item FOR FOREIGN STUDENTS
    \item (Paraphrase of poetry passage) \quad 10 marks
\end{itemize}

(iv) Official, business and letters to the editors.  10 marks

(v) Transformation of all types (10 out of 10)  10 marks

Note : Minimum six periods a week for the study of the subject.
For composition, there should be Groups of 25-30 students.
प्रेससी भागभी - बी.सी.ई. - 02
बी.सी.ई. बच्चा पाठ्यक्रम (2014) के शिक्षण योजना

पेपर-5

वचः अंक: 50
शिकड़ी: 45
शिकड़ी अने संपूर्णता: 5
पत्र: 3 पृष्ठे

गिताक्रियाएँ

1. आपूर्तिक गृहस्थी बारीसंग दीन संतोषी होवड़ां संग आपूर्तिक
2. बाँटबाँटी हैं गृहस्थी बारीसंग दीन आपूर्तिक
3. बाँटबाँटी हैं गृहस्थी बारीसंग दीन संगेस्वर सीख हैं बरतर / जीताफाड़

बेकार

1. आपूर्तिक बारीक संवाह, सौंप. डे. सौंप. सौंप. डे. सौंप, ध्वनिबार गृहस्थी बारीसंग बाँटबाँटी, चंदीवाड़ा
2. बारीक (In Katha Bodh only 12 Chapters 1, 3, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 17 will be in the syllabus while Chapter Nos. 2, 4, 5, 15, 16 & 18 be considered deleted), ध्वनिबार: गृहस्थी बारीसंग बाँटबाँटी, चंदीवाड़ा

पुरुषार अंतः वीभि

1. आपूर्तिक बारीक संवाह, ध्वनिबार बिचि परंतु मुख्य बिचि भिन्न, ध्वनिबारिका (धातु बिचि हैं)
2. धातु बिचि परंतु धातु मात्र घट नाते बेंकड़ी बाढ़ (धातु बिचि हैं)
3. धातु बिचि परंतु मुख्य बिचि भिन्न, ध्वनिबारिका (धातु बिचि हैं)
4. धातु बारीसंग धातु (धातु बिचि)
5. धातु लेखिका धातु सीखर, धातु अंतः जीताफाड़, धातु लेखिका धातु बिचि दिख

पेपर-5 पुरुषार दसी देणा धातुबारं बिचि धेंड बिचि लेखिका लिखित दिल: क्रमशः लिथा सिध्ध, पुतला सिध्ध, पृ. मंडला सिध्ध, आभिज्ञ पुष्कर, सिध्ध उपन्यास, मंडल सिध्ध संपूर्ण, क्रमशः लिथा सिध्ध अंतः लिथा सिध्ध यी.
पेशव—वी

कुल अंक: 50
विडियो: 45
प्रश्नपत्र अधिकारी: 5
संख्या: 3 प्रति

पिछला

1. संधि 15 अंक
2. पेपर पढ़ने वाले पुस्तकों से पृष्ठ पटरा 10 अंक
3. प्रश्न नक्शा दे बच्चे नक्शा 15 अंक
4. भूगर्भ 5 अंक

पुलिट्र अधीन वीभव

1. संधि (500-600 प्रश्न)

(भाषक, सविभाजन आदि भाषा वांटी बांटे)

2. पेपर पढ़ने वाले पुस्तकों से पृष्ठ पटरा

(फिर सिंगल 3 पृष्ठ पृष्ठ कटावो - पेपर दे सिलडिप, जव अटकं लाए अनजम बांटे पृष्ठ अंक पेपर राखे संबंध
de घात पृष्ठ)

3. (ई) प्रश्न पृष्ठीय

(अ) बच्चे पृष्ठीय

4. भूगर्भ

प्रश्नपत्र प्रमाण:

1. पेपरीय संदर्भ वेबसाइट अधिकारी, पेपर पादेट पुस्तक संगठनीय टेक्नो वेब वेबड, चेडीवाड़।

2. वर्णन पेपरीय विषयवस्तु, वेबसाइट समय, पेपर पादेट पुस्तक संगठनीय टेक्नो वेब वेबड, चेडीवाड़।

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OR

BCA-02 : HISTORY AND CULTURE OF PUNJAB

Max. Marks : 100
Theory : 90 marks
Internal Assessment : 10 marks
Time : 3 hours

General Instructions :
1. In all, nine questions will be set. Each question will carry 18 marks.

2. First question shall be Short Answer type containing 15 short questions spread over the whole syllabus. Candidates will attempt nine out of the fifteen questions in about 25 to 30 words each. Each short question will carry 2 marks totalling $9 \times 2 = 18$ marks. The first question is compulsory.

3. Rest of the paper shall contain 4 units. Each unit shall have two essay type questions and the candidates shall attempt one question from each unit–4 in all.

4. 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 (4) in the question paper.

HISTORY AND CULTURE OF PUNJAB 1200-1849 A.D.

Unit-I

1. Society in the Punjab during the Afghan rule.
2. The Punjab under the Great Mughals.

Unit-II

4. Guru Nanak : His teachings; concept of Langar and Sangat.
Unit-III

7. Martyrdom of Guru Tegh Bahadur; foundation of the Khalsa by Guru Gobind Singh.
8. Banda Bahadur and his achievements; Sikh struggle for sovereignty from 1716 to 1765; role of Dal Khalsa, Rakhi, Gurmata and Misl.
9. Ranjit Singh’s rise to power; civil and military administration; relations with the British.

Unit-IV

10. Social change with special reference to the position of women.
11. New developments in language, literature, architecture in the Punjab during the Medieval period.
12. Famous Folk tales of Medieval Punjab.

Suggested Readings:

1. Singh, Kirpal, History and Culture of the Punjab, Part II (Medieval period), Publication Bureau, Punjabi University, Patiala, 1990 (3rd edn.).
   N.B. : The required detail and depth would conform to the treatment of the subject in the above survey. (This book will also form the basis of the short answer questions).

Note: The following categories of the students shall be entitled to take the 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 Government employee/employees who are transferable on all India basis.
(c) Foreigners.

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ENVIRONMENT & ROAD SAFETY EDUCATION

UNIT I (ENVIRONMENT)

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.

**Practicals**:
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.

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

**UNIT II (ROAD SAFETY)**

1. Concept and Significance of Road Safety.
2. Role of Traffic Police in Road Safety.
4. Traffic Signs.
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.

**Examination Pattern**:

- Seventy multiple choice questions (with one correct and three incorrect alternatives and no deduction
for wrong or un-attempted question).
- The paper shall have two units: **Unit I (Environment) and Unit II (Road Safety)**.
- Unit I shall comprise of 50 questions with minimum of 2 questions from each topics 1, and 12 to 15
and minimum of 4 questions from topics 2 to 11.
- Unit II shall comprise of 20 questions with minimum of 1 question from each topics 1 to 10.
- The entire syllabus of Unit I is to be covered in 25 hours and that of Unit II is to be covered in 10
hours.
- All questions are to be attempted.
- Qualifying Marks 33 per cent i.e. 23 marks out of 70.
- Duration of examination: 90 minutes.
- The paper setters are 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](http://www.chandigarhpolice.nic.in)
(b) [www.punjabpolice.gov.in](http://www.punjabpolice.gov.in)
(c) [www.haryanapolice.gov.in](http://www.haryanapolice.gov.in)
(d) [www.hppolice.nic.in](http://www.hppolice.nic.in)
SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS

Paper Code : BCA-03
Paper Title : Mathematics
Theory Marks : 90
Number of Lectures : 100
(45 minutes duration)

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.

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.

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

SECTION-B

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

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

SECTION-C

5. 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.

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

SECTION-D

7. Integration-II :
Integration by parts, Definite Integrals, Properties, Area under the curve.

8. 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 :

SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS

Paper Code : BCA-04
Paper Title : Personal Computing Software
Theory Marks : 90
Number of Lectures : 100
(45 minutes duration)

Objectives : The objective of this course is to familiarize students with concepts of Fundamentals of it 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.

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 : Versions of 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 Introduction to line editor. Batch Files: Introduction to simple batch files; Batch files commands: ECHO, PAUSE, REM; Batch files with command line arguments; Single and multiple command line parameters, Introduction to CONFIG.SYS and AUTOEXEC.BAT files.
(No. of Periods : 25)

SECTION-B


Word Processing Package: Basics of Word Processing; Word Processing Basics; Opening and Closing of documents; Text creation and Manipulation; Finding and replacing text, Printing of word 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, Retrieving often used text; Autotext character formatting, language setting and thesaurus; Mail merging.
(No. of Periods : 25)
SECTION-C


Presentation Packages: Basics, General Features, Creating a presentation

(No. of Periods: 25)

SECTION-D


(No. of Periods: 25)

References:

SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS

Objectives: This course will enable the student to understand the basic organization of computer system and system maintenance.

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

2. Architecture of a Simple Processor: An instruction set, Addressing Modes, Instruction formats, Instruction execution in terms of Microinstructions, Concept of interrupt and simple I/O organisation, I/O organization: Strobe based and Handshake based communication, Vector and priority interrupts, DMA based data transfer; CPU organisation with large registers, Stacks and handling of interrupts and subroutines, Instruction pipelining: Stages, Hazards and methods to remove hazards. Concept of Bus, data movement among registers, data movement from/to memory.
   (No. of Periods: 25)

SECTION-C

3. Memory Organisation: RAM, Basic cell of static and dynamic RAM, Building large memories using chips, Associative memory, Cache memory organisation, Virtual memory organisation. Assembly Language Programming: Machine and assembly language, Pseudo operations, subroutines in assembly language, Register Transfer Language and micro-operations; Language to represent conditional data transfer, Arithmetic and logical operations along with register transfer.
   (No. of Periods: 25)

SECTION-D

4. System Maintenance, Physical Inspection of a PC and internal cards, Diagnostics on a PC, Functional description of various modules and cards. Installing a software, Viruses, Types of viruses, Detection of viruses and protection on a PC.
   (No. of Periods: 25)

References:

Paper Code : BCA-06
Paper Title : Computer Programming & Problem Solving Through “C”
Theory Marks : 90  
Number of Lectures : 100  
(45 minutes duration)

**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, control structure and arrays. After completion of this course, the student is expected to analyze the real life problem and write a program in ‘C’ language to solve problem. The main emphasis of the course is on problem solving aspect that is, developing proper algorithms.

**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 :**

Paper Code        :  BCA-07
Paper Title       :  Computer Lab.-1 Based on BCA-04
Theory Marks      :  90

Paper Code        :  BCA-08
Paper Title       :  Computer Lab.-2 Based on BCA-06
Theory Marks      :  90
SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS

SYLLABI AND COURSES OF READING FOR BACHELOR OF COMPUTER APPLICATIONS
FOR THE EXAMINATION OF 2014

SECOND YEAR

Paper Code : BCA-09
Paper Title : Project Management and System Development
Theory Marks : 90 Number of Lectures : 100
(45 minutes duration)

Objectives :

• Define the characteristics of a project.
• Explain the need for project management.
• Compare and contrast the roles of project managers in organizational environments.
• Describe the systems development cycle.
• Explain the roles of systems analysis and systems management in the life cycle of a project.

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


SECTION-B


SECTION-C


(Total No. of Periods – 25)
SECTION-D


(Total No. of Periods – 25)

References:


Paper Code : BCA-10
Paper Title : Computer Based Numerical and Statistical Methods (Using C)
Theory Marks : 90
Number of Lectures : 100 (45 minutes duration)

**Objectives:** To Teach implementation numerical and statistical 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.

**SECTION-A**

**Numerical Methods :**

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

- **Iterative Methods :**

  (No. of Periods : 25)

**SECTION-B**

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

- **Interpolation:** Lagrange, Newton forward, Newton Backward, Divided Difference, Newton forward difference, Newton Backward difference, Numerical Integration: Trapezoidal, Simpson’s 1/3, Simpson’s 3/8, Weddle and Runge–Kutta Methods: 2nd order & 4th order.

  (No. of Periods : 25)

**Note:** Log tables may be provided.
SECTION-C

Statistical Methods :

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

Measures of Dispersion, Skewness and Kurtosis, Range :
Mean deviation, Standard deviation, Coefficient of variation, Moments, Skewness and Kurtosis.

(No. of Periods : 25)

SECTION-D

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

Development of Programs for Statistical Methods using C.

(No. of Periods : 25)

References :

1. Salaria, R.S. : Computer Oriented Numerical Methods, Khanna Book Publishing
   Co. (P.) Ltd., New Delhi.
   India.
5. Balaguruswami, E., 2000 : Computer Oriented Statistical and Numerical Methods, Mac
   Million.
   Press, Inc.
8. Salaria, R.S. : Simplified Text-cum-Workbook on Computer Oriented Numerical
   Methods : A Programming Approach, Khanna.
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 taught using previously learned 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.

SECTION-A


(No. of Periods : 25)

SECTION-B

2. 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 : 25)

SECTION-C

3. Graphs and their application, Sequential and Linked representation of Graph-adjacency, Matrix, Operations on Graph, Traversing a graph.

(No. of Periods : 25)

SECTION-D


(No. of Periods : 25)

References:


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

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. Introduction to DBMS, Advantages and disadvantages of DBMS, introduction to RDBMS, The 12 Rules (Codd's Rule) for RDBMS, Difference b/w DBMS and RDBMS. 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 : 25)

SECTION-B
(No. of Periods : 25)

SECTION-C
(No. of Periods : 25)

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 : 25)

References:
Objectives: By the end of the course, students will be able to write C++ programs using the more esoteric language features, utilize OO techniques to design C++ programs, use the standard C++ library, exploit advanced C++ techniques.

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


   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.

   (No. of Periods : 25)

SECTION-B


   (No. of Periods : 25)

SECTION-C

3. Function Overloading & Operator Overloading.

   Inheritance - Extending Classes 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, Multi-level inheritance, Nesting of classes.

   (No. of Periods : 25)

SECTION-D


   (No. of Periods : 25)

References:
3. E. Balaguruswamy, 2008: Object Oriented Programming with C++, TMH.
SYLLABUS OF BACHELOR OF COMPUTER APPLICATIONS

Paper Code : BCA-14
Paper Title : Unix Operating System
Theory Marks : 90
Number of Lectures : 100
(45 minutes duration)

Objectives : - Work comfortably in the 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.

SECTION-A
1. Introduction to Operating Systems, its needs and services, Simple batch Systems, Multi-programmed batched systems, Time sharing systems, Parallel systems, Distributed systems and Real-time systems. (No. of Periods : 15)
2. Overview of UNIX : History, Features of UNIX, Comparison between UNIX and Windows. (No. of Periods : 05)
3. Structure of UNIX Kernel, Shell, Command execution. (No. of Periods : 05)

SECTION-B
4. UNIX directory system.

SECTION-C
5. Administering UNIX Systems : 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 : 25)

SECTION-D
6. 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. (No. of Periods : 10)
7. The AWK pattern scanning and processing language. (No. of Periods : 05)
8. UNIX and Networking : Setting up of DNS, Mail, WWW servers under UNIX. (No. of Periods : 10)

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SYLLABI AND COURSES OF READING FOR BACHELOR OF COMPUTER APPLICATIONS
FOR THE EXAMINATION OF 2014

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 various target groups in entrepreneurial traits so that they 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:


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:


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, Macromedia Director.
   (No. of Periods : 25)
References:


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

Objectives :

• To describe basic Internet Protocols.
• 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 \textbf{nine} questions comprising \textbf{two} questions from each Section and \textbf{one} compulsory question of short answer type covering whole syllabi.
(iii) The students are required to attempt \textbf{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 structs 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)
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 : This is first mathematics subject. Student will learn and revise his knowledge acquired previously. 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.

2. Recurrence : Recurrence Relations and Recursive Algorithms – Linear-Recurrence Relations with Constant Coefficients; Homogeneous Solutions : Particular Solution, Total Solution, Solution by the Method of Generating functions.

(No. of Periods : 25)

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.

(No. of Periods : 25)

SECTION-C


(No. of Periods : 25)

SECTION-D


(No. of Periods : 10)

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.

(No. of Periods : 15)
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).

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