FACULTY OF SCIENCE

SYLLABI

FOR

BACHELOR OF COMPUTER APPLICATIONS

(1st to 6th Semester)

FOR

2017 - 2018 SESSIONS
# Panjab University, Chandigarh

## Scheme of Examination and Syllabus of BCA w.e.f. 2017-18

### Bachelor of Computer Applications Semester – I

<table>
<thead>
<tr>
<th>Paper Code</th>
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| Environment, Road Safety Education & Violence against Women & Children |

| Total          | 24 | 1 | 12 | 37 | 40 | 360 | 400   | 16     |

### Bachelor of Computer Applications Semester – II

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| Total         | 24 | 1 | 12 | 37 | 40 | 360 | 400   | 16     |
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### Bachelor of Computer Applications - Fifth Semester

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### Bachelor of Computer Applications - Sixth Semester

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*The Environment, Road Safety Education & Violence against Women & Children is a compulsory qualifying paper which the students have to study in the B.C.A. 1st year (2nd Semester). If the students failed in qualify the paper during 2nd Semester, he / she / they be allowed to appear / qualify the same in the 4th or 6th semester/s."
FIRST SEMESTER
FIRST SEMESTER
English (Compulsory) – A
BCA-16-101

L  T  P  Cr  Externa l Marks : 65
6   -  -   3  Internal Marks : 10

Time Duration : 3Hrs.  Number of Lectures : 60

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)
   
   **10 marks**

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

III) **Poetry (1 to 6)**
   15 marks
   Summary (one out of two with internal choice)  
   Short Questions (two out of three)  
   Reference to the Context (one out of two with internal choice)  

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)  
   **5 marks**

   OR

   For Foreign Students (Paraphrase of Poetry Passage)

4) Official, Business and Letters to the Editors  
   **5 marks**
Fundamentals of Mathematical Statistics

BCA-16-102

L T P Cr External Marks: 65
6 1 - 3 Internal Marks: 10

Time Duration: 3 Hrs. Number of Lectures : 60

Objective: To teach the students the basic techniques Statistical Methods. After completing this course students will be able to solve various Financial, Scientific and Engineering fields’ problems.

Note:
1. The Question Paper will consist of Four Units.
2. Examiner will set total of NINE questions comprising TWO questions from each Unit and ONE compulsory question of short answer type covering whole syllabi.
3. The students are required to attempt ONE question from each Unit and the Compulsory question.
4. All questions carry equal marks unless specified.
5. The student can use only Non-programmable & Non-storage type of Calculator.
6. Log tables are allowed. Students may be provided the same for computation.

UNIT - I
Basic Statistics: Types of Statistics, Different Statistical Techniques, Steps in Statistical Investigation, Uses and Limitations of statistics, Collection of Data: Sources of collecting primary and Secondary Data, Limitations of Secondary Data, Criteria of evaluating secondary data, Organization of data, Graphs of Grouped Frequency Distribution, Tabulation of Data, Parts of Table
Measures of Central Tendency: Kinds of measures of central tendency (statistical averages or averages):
Arithmetic Mean: Simple Arithmetic Mean, Methods of calculating Simple Arithmetic Mean, Arithmetic Mean in case of Individual Series, Discrete series and continuous series, Weighted Arithmetic Mean, Combined Arithmetic Mean.
Geometric Mean: Simple Geometric Mean, Methods of calculating Simple Geometric Mean, Geometric Mean in case of Individual Series, Discrete series and continuous series, Weighted Geometric Mean, Combined Geometric Mean.
Harmonic Mean: Simple Harmonic Mean, Methods of calculating Simple Harmonic Mean, Harmonic Mean in case of Individual, Discrete series and continuous series, Weighted Harmonic Mean, Combined Harmonic Mean.

UNIT - II
Median: Methods of Calculating Median in case of Individual, Discrete series and continuous series
Partition Value: Quartile, Quintiles, Hexiles, Septiles, Octiles, Deciles, Percentiles
Mode: Methods of Calculating Mode in case of Individual Series, Discrete series and continuous series
Range: Computation of Range, Inter Quartile Range, Computation of Inter Quartile Range, Percentile Range and Computation of Percentile Range.
Mean Deviation, Computation of Mean Deviation, Standard Deviation, Calculation of Standard Deviation, Variance, Calculation of Standard Deviation for individual Series, Discrete Series and Continuous Series, Coefficient of Standard Deviation and coefficient of variation, Combined Standard Deviation, Correcting incorrect Standard Deviation
UNIT - III


UNIT - IV


**Suggested Readings:**

Objectives: The objective of this course is to familiarize students with complete Fundamentals and the carriers commonly used computing software.

Note:

i. The Question Paper will consist of Four Units.

ii. Examiner will set total of **NINE** questions comprising **TWO** questions from each Unit and **ONE** compulsory question of short answer type covering whole syllabi.

iii. The students are required to attempt **ONE** question from each Unit and the Compulsory question.

iv. All questions carry equal marks unless specified.

UNIT - I

**Computer Appreciation:** Introduction to computers, characteristics of computer; History of computers; Classification of computers on size: (Micro, Mini, Mainframe and super computers), Working Principles, Generations; Applications of computers; commonly used terms–Hardware, Software, Firmware. Basic Computer Organization: Block diagram of computer system, Input unit, Processing Unit and Output Unit; Description of Computer input devices: Keyboard, Mouse, Trackball, Pen, Touch screens, Scanner, Digital Camera; Output devices: Monitors, Printers, Plotters.

**Computer Memory:** Representation of information: BIT, BYTE, Memory, Memory size; Units of measurement of storage; Main memory: Storage evaluation criteria, main memory organization, RAM, ROM, PROM, EPROM; Secondary storage devices: Sequential Access Memory, Direct Access Memory Magnetic Tapes, Magnetic disks, Optical disks: CD, DVD; Memory storage devices: Flash Drive, Memory card;

**Types of software:** System and Application software; Programming Languages: Generation of Languages; Translators - Interpreters, Compilers, Assemblers and their comparison.

UNIT - II

**Understanding Operating System using DOS:** Introduction to operating systems and its functions, DOS and versions of DOS, Booting sequence; Warm and Cold Boot; Concepts of files and directories, Redirecting command input and output using 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.

UNIT - III

Word Processing Package: Opening, saving and closing an existing document; renaming and deleting files; Using styles and templates: Introduction to templates and styles; applying, modifying and creating new (custom) styles; using a template to create a document, creating a template, editing a template, organizing templates, examples of style use, Changing document views, Moving quickly through a document, Working with text: select, cut, copy, paste, find and replace, inserting special characters, setting tab stops and indents, Checking spelling and Grammar, Autocorrect, Using built-in language tools, word completion, Autotext, Formatting text: Using Styles, formatting paragraphs, formatting characters, auto-formatting, creating lists; Formatting pages: Using layout methods, creating headers and footers, Numbering pages, Changing page margins, Adding comments to a document, Creating a table of contents, Creating indexes and bibliographies, Printing a document, Using mail merge, Tracking changes to a document, Using fields, Linking to another part of a document, Using master documents, Creating fill-in forms.

UNIT - IV

Spreadsheet Package: Introduction to Spreadsheets, sheets and cells; Opening and saving spreadsheet files; Working with sheets: inserting new sheet, deleting and renaming sheets, Viewing a spreadsheet: freezing rows and columns, splitting screen, Entering data: cell referencing, formatting cells, entering numbers, entering numbers as text, entering formulae, entering date and time, deactivating automatic changes, Speeding up data entry: using fill tool, fill series, defining fill series, Validating cell contents, Formatting data: formatting text, numbers, cells, Autoformatting cells and sheets, defining new autoformat, Using conditional formatting, Hiding and showing data, Sorting records, Printing a spreadsheet document: using print ranges, page formats, inserting page breaks, headers and footers; Working with Graphs and Charts: Creating Embedded Chart, formatting chart: Changing chart types, adding Titles, Legends and Gridlines, Printing Charts; Adding database functions: defining database ranges, sorting, filtering and grouping database ranges; Evaluating data: using DataPilot; Functions and Macros: using and editing existing macro, Creating Macros, Recording Macros, Running Macros.

Presentation Packages: Basics of creating a presentation, Parts of main window, workspace views, creating a presentation, Incorporation of Animation.

Note: Any word processing, spreadsheet and presentation package may be used. Focus should be on open source software’s.

Suggested Readings:
4. OOoAuthors Team: Getting Started with OpenOffice.org 3.3, Friends of OpenDocument
Problem Solving Through C
BCA-16-104

L T P Cr External Marks: 65
6 - - 3 Internal Marks: 10

Time Duration: 3 Hrs.
Number of Lectures : 60

Objective: 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 Question Paper will consist of Four Units.
ii. Examiner will set total of NINE questions comprising TWO questions from each Unit and ONE compulsory question of short answer type covering whole syllabi.
iii. The students are required to attempt ONE question from each Unit and the Compulsory question.
iv. All questions carry equal marks unless specified.

UNIT - I
Fundamentals of C Languages: History of C, Character Set, Identifiers and Keywords, Constants, Types of C Constants, Rules for Constructing Integer, Real and character Constants, Variables, Data Types, rules for constructing variables.
 operators and Expressions: C Instructions, Arithmetic operators, Relational operators, Logical operators, Assignment Operators, Type Conversion in Assignments, Hierarchy of Operations, Standard and Formatted Statements, Structure of a C program , Compilation and Execution.

UNIT - II
Decision Control Structure: Decision making with IF-statement, IF-Else and Nested IF-Else, The else if Clause.
Loop Control Structure: While and do-while, for loop and Nested for loop,
Case Control Structure: Decision using switch, Thegoto statement.
Functions: Library functions and user defined functions, Global and Local variables, Function Declaration, Calling and definition of function, Methods of parameter passing to functions, recursion, Storage Classes in C.

UNIT - III
Arrays: Introduction, Array declaration, Accessing values in an array, Initializing values in an array, Single and Two Dimensional Arrays, Initializing a 2-Dimensional Array, Memory Map of a 2-Dimensional Array, Passing array elements to a function: Call by value and call by reference, Arrays of characters, Insertion and deletion operations, Searching the elements in an array, Using matrices in arrays, Passing an Entire Array to a Function.
**Pointers:** Pointer declaration, Address operator “&”, Indirection operator “*”, Pointer and arrays, Pointers and 2-Dimensional Arrays, Pointer to an Array, Passing 2-D array to a Function, Array of Pointers.

**Dynamic Memory Allocation:** malloc(), calloc(), realloc(), free() functions.

**UNIT - IV**

**String Manipulation in C:** Declaring and Initializing string variables, Reading and writing strings, String Handling functions (strlen(), strcpy(), strcmp(), strcat()).

**Structures and Unions:** Declaration of structures, Structure Initialization, Accessing structure members, Arrays of structure, Nested structures, Structure with pointers, Union.

**Files in C:** Introduction, Opening and Closing files, Basic I/O operation on files.

**Suggested Readings:**

**Essential :**

**Further Reading:**
SECOND SEMESTER
English (Compulsory) – B

BCA-16-201

L T P Cr
6 - - 3

External Marks : 65
Internal Marks : 10

Time Duration : 3Hrs.

Number of Lectures : 60

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) 10 marks

2) Prose (4-5)
Long essay type question on Summary/Theme (one out of two with internal choice) 10 marks

3) Poetry (7-11)
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) 5 marks

OR

For Foreign Students (Paraphrase of Poetry Passage)

4) Transformation of all types (5 out of 5) 5 marks
### Computer Organization

**BCA-16-202**

External Marks: 65  
Internal Marks: 10

**Time Duration:** 3 Hrs.  
**Number of Lectures:** 60

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

**Note:**

1. The Question Paper will consist of Four Units.
2. Examiner will set total of **NINE** questions comprising **TWO** questions from each Unit and **ONE** compulsory question of short answer type covering whole syllabi.
3. The students are required to attempt **ONE** question from each Unit and the Compulsory question.
4. All questions carry equal marks unless specified.

#### UNIT - I


#### UNIT - II

**Architecture of a Simple Processor:** Architecture of 8086/8088 microprocessor, instruction set, Addressing Modes, Instruction: Microinstructions: Register Transfer, Arithmetic, Logical and Shift, Types of Instructions, Instruction Cycle, Interrupt: Types, Interrupt Cycle, I/O organization: Strobe based and Handshake based communication, DMA based data transfer;

#### UNIT - III

**Memory Organisation:** Memory Hierarchy, RAM (Static and Dynamic), ROM, Associative memory, Cache memory organisation, Virtual memory organisation, Assembly Language: Features of Assembly Language, Machine Language vs Assembly Language, Pseudo Instruction; use of Assembly for programs: Addition, Subtraction, Multiplication using Subroutines and Basic Input/Output.

#### UNIT – IV

**System Maintenance:** Introduction to various physical components of a computer, Physical Inspection and Diagnostics on PC, Functional description of various Internal and External cards; Viruses: Types of Computer Viruses, Detection, prevention and protection from Viruses.
Suggested Readings:

Essential:


Further Reading:

Fundamentals of Web Programming

BCA-16-203

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>Cr</th>
<th>External Marks: 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>Internal Marks: 10</td>
</tr>
</tbody>
</table>

Time Duration: 3 Hrs.   Number of Lectures : 60

Objectives: This course will enable the student to build and publish web sites using HTML, DHTML, CSS, JavaScript and Dreamweaver.

Note:

i. The Question Paper will consist of Four Units.
ii. Examiner will set total of **NINE** questions comprising **TWO** questions from each Unit and **ONE** compulsory question of short answer type covering whole syllabi.
iii. The students are required to attempt **ONE** question from each Unit and the Compulsory question.
iv. All questions carry equal marks unless specified.

UNIT - I

**Basic Terminology:** Web Server; Web Client/Browser, Understanding how a Browser communicates with a Web Server, Website, Webpage, Static Website, Dynamic Website, Internet, Intranet, Extranet, WWW, URL

**HTML:** Structure of an HTML program, Paragraph Breaks, Line Breaks; Emphasizing Material in a Web Page (Heading Styles, Drawing Lines); Text Styles (Bold, Italics, Underline); Other Text Effects (Centering (Text, Images etc.)

Lists: Unordered List, Ordered Lists, Definition lists

Adding Graphics to HTML Documents using the Border, Width, Height, Align, ALT Attributes

Tables: Caption Tag, Width, Border, Cell padding, Cell spacing, BGCOLOR, COLSPAN and ROWSPAN Attributes.

UNIT - II

**Linking Documents:** Anchor tag, External Document References, Internal Document References and Image Maps

**Frames:** Introduction to Frames: The <FRAMESET> tag, The <FRAME> tag, Targeting Named Frames

**DHTML:** Introduction to cascading style sheets (CSS), Style tag, Link tag, Types of CSS: In-Line, Internal, External

**Forms:** Attributes of Form element, Input element, The Text Element, Password, Button, Submit Button, Reset Button, The Checkbox, Radio, TextArea, Select and Option

UNIT - III

**Java Script:** Introduction and Features of JavaScript, Writing JavaScript into HTML, tokens, data types, variables, operations, control constructs, strings arrays, functions, core language objects, client side objects, event handling. Applications related to client side form validation.
Other Built-In Objects in JavaScript: The String Object, The Math Object, The Date Object;

UNIT - IV

Web Hosting: Understanding Domain Name & Web Space, Getting a Domain Name & Web Space (Purchase or Free), Uploading the Website to Remote Server, Introduction to Open Source Third party FTP Tools

Suggested Readings:

Essential :

2. Bayross, Ivan : HTML, DHTML, Java Script by BPB, Latest reprint

Further Reading :

5. Thomas Powell : HTML & CSS: The Complete Reference
8. David Powers : The Essential Guide to Dreamweaver CS4
Object Oriented Programming using C++

BCA-16-204

L T P Cr
6 - - 3

External Marks: 65
Internal Marks: 10

External Marks: 65
Internal Marks: 10

Time Duration: 3 Hrs.
Number of Lectures : 60

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

Note:

i. The Question Paper will consist of Four Units.
ii. Examiner will set total of NINE questions comprising TWO questions from each Unit and ONE compulsory question of short answer type covering whole syllabi.
iii. The students are required to attempt ONE question from each Unit and the Compulsory question.
iv. All questions carry equal marks unless specified.

UNIT - I

Principles of Object Oriented Programming (OOP): Introduction to OOP, Difference between OOP and Procedure Oriented Programming; Concepts: Object, Class, Encapsulation, Abstraction, Polymorphism and Inheritance, Applications of OOP. Special operators: scope resolution operator, Member Dereferencing operators, Memory management operators, Manipulators and Type cast operator

Structure of a C++ Program and 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.

UNIT - II

Friend function, inline function, Static members, Function Overloading, Arrays within a class. Arrays of Objects; Objects as function arguments: Pass by value, Pass by reference, Pointers to Objects.

Constructors: Declaration and Definition, Types of Constructors, (Default, Parameterized, Copy Constructors). Destructors: Definition and use.

Operator Overloading & Type Conversion: Conversion from basic type to user defined type, User defined to basic type and one user defined conversion to another user defined type.
UNIT - III

**Inheritance:** Extending Classes Concept of inheritance, Base class, Defining derived classes, Visibility modes : Public, Private, Protected ;Types of Inheritance: Single inheritance : Privately derived, Publicly derived; Making a protected member inheritable, multilevel inheritance, multiple Inheritance and ambiguity of multiple inheritance, Hierachal Inheritance, Hybrid, Nesting of classes.

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

UNIT - IV

**Exception Handling:** Definition, Exception Handling Mechanism : Throwing mechanism and Catching Mechanism, Rethrowing an Exception

**File Processing:** Opening and closing of file, Binary file operations, structures and file operations, classes and file operations, Random file processing.

**Suggested Readings :**

**Essential :**
1. E. Balaguruswamy, 2008 : Object Oriented Programming with C++, TMH.

**Further Reading :**
ENVIROMENT, ROAD SAFETY EDUCATION AND VIOLENCE AGAINST WOMEN AND CHILDREN (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 vermi composting 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.chandigarhpolicenic.in
(b) www.punjabpolice.gov.in
(c) www.haryanapolice.gov.in
(d) www.hppolice.nic.in
SYLLABUS ON “VIOLENCE AGAINST WOMEN & CHILDREN” AT UNDER-GRADUATE LEVEL

UNIT III OF COMPULSORY PAPER ON ENVIRONMENT & ROAD SAFETY EDUCATION

AS PART OF SEMESTER - II

VIOLENCE AGAINST WOMEN & CHILDREN

1. Concept and Types of Violence: Meaning and Definition of violence; Types of Violence against women – domestic violence, sexual violence (including rape), sexual harassment, emotional/psychological violence; Types of Violence against children – physical violence, sexual violence, verbal and emotional abuse, neglect & abandonment.

2. Protective Provisions of IPC on Domestic Violence & Sexual Violence against Women:
   - **Dowry Death** – Section 304B;
   - **Rape** – Sections 375, 376(1), 376A, 376B, 376C, 376D and 376E;
   - **Cruelty** – Section 498A;
   - **Insult to Modesty** – The Indian Penal Code does not define the word eve-teasing; there are three sections which deal with crime of eve-teasing. These are Sections, 294, 354 and 509 of Indian Penal Code. Section 509 of the Indian penal code defines (Word, gesture or act intended to insult the modesty of a woman), Section 294 – (Obscene acts and songs) and Section 354 (Assault or criminal force to woman with intent to outrage her modesty);
   - **Hurt & Grievous Hurt Provisions** – Sections 319 to 326;
   - **Acid Attacks** – Sections 326A and 326B;
   - **Female Infanticide** – Section 312, Section 313 of Indian Penal Code (Causing miscarriage without women’s consent) and section 314;
   - **Sexual Harassment** – For providing protection to working women against sexual harassment, a new section 354 A is added; 354 B (Assault or use of criminal force to women with intent to disrobe); 354 C Voyeurism; 354 D (Stalking). All these provisions are added in IPC to protect women against acts of violence through Criminal Law (Amendment) Act, 2013; Human Trafficking and Forced Prostitution- Sections 370 and 370A

3. Protective Laws for Women:


   3.2 **The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013** – Definition, Internal Complaint Committee, Local Complaint Committee, Procedure adopted by Committee for punishing accused.

4. Protective Provisions of IPC regarding Sexual Violence against Children:
   - **Section 293** (sale etc. of obscene objects to young persons); 294 (obscene acts & songs); 305 (abetment of suicide of child); 315 to 317 (act causing death after birth of a child etc.); 361
(kidnapping from lawful guardianship); 362 (abduction); 363 (punishment for kidnapping); 363A (kidnapping or maiming a minor for purposing of begging); 364A (kidnapping for ransom etc.); 366 (kidnapping etc. to compel woman for marriage etc.); 366A (procuration of minor girl for illicit forced intercourse); 366B (importation of girl from foreign country); 367 (kidnapping/abduction in order to subject person to grievous hurt, slavery etc.); 369 (kidnapping adductive child under 10 year with intent to steal from its person); 372 & 373 (selling & buying minor for purposes of prostitution etc.).

4.1 The Protection of Children from Sexual Offences Act, 2012: An overview of the POCSO, relevant legal provisions and guidelines for the protection of children against sexual offences along with punishments; role of doctors, psychologists & mental experts as per rules of POCSO.

Note: Instructions for Examination:

- Unit III of the paper dealing with Violence against Women and Children is of 30 Marks.
- It shall have 30 multiple-choice questions (with one correct and three incorrect choice options and no deduction of marks for wrong or un-attempted questions).
- Minimum two questions from each topic must be covered.
- All the questions are to be attempted.
- Qualifying Marks 33 percent
- Duration of Examination 30 Minutes
- The Paper Setter is requested to set the questions strictly according to the syllabus.

Pedagogy:

- The entire syllabus of Unit III is to be covered in ten hours in total, with each lecture of one-hour duration.
- The purpose behind imparting teaching-learning instructions is to create basic understanding of the contents of the Unit III among the students.

RELEVANT READING MATERIAL

Ahuja, Ram (1998), Violence against Women, New Delhi: Rawat Publication
NRHM, Child Abuse, A Guidebook for the Media on Sexual Violence against Children
The Protection of Children from Sexual Offences Act, 2012
The Protection of Women from Domestic Violence Act 2005
The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013
UNO, United Nations Secretary-General’s Study on Violence against Children, adapted for Children and Young People
Unit IV (Drug Abuse)

Drug Abuse: Problem, Prevention and Management

Note: This is a compulsory qualifying paper, which the students have to study and qualify during three year of degree course.

Main Objective

This module introduces to the students the problem of drug abuse and its adverse consequences for the society. The students would get an understanding of why drug abuse is such a serious problem to our society. The course also apprises them of how to prevent and manage this menace.

Learning objectives of the course

1. Understand the meaning of the term drug.
2. Understand the difference between use, misuse and abuse of drugs.
3. Differentiate between commonly abused legal and illegal drugs.
5. Understand the causes and consequences of drug abuse.
6. Identify and access safety measures for support to stay away/give up drug abuse.

Pedagogy of the course work

1. 70% Lectures (Including expert lectures)
2. 30% assignments, discussion, seminars and class tests.
   • A visit to drug de-addiction centre could also be undertaken

Course content

UNIT I: Problem of Drug Abuse


b) Types of drugs often abused and their effects

Stimulants: tobacco Amphetamines: dl-amphetamine (Benzedrine ®), dextroamphetamine (Dexedrine®). Cocaine.

Depressants: Alcohol. Barbiturates: phenobarbitone (Nembutal®), secobarbital (Seconal®), Benzodiazepenes: diazepam (valium ®), alprazolam (Xanax®), flunitrazepam (Rohypnol®)

Narcotics: Morphine, heroin (‘Chitta’/ ‘Brown Sugar’), pethidine, oxycodone.

Hallucinogens: cannabis (‘Bhang’, marijuana (‘Ganja’), hashish (‘Charas’), hash oil]. MDMA (3, 4- methylenedioxy methamphetamine) /’Ecstasy’/ ‘Molly’. LSD (lysergic acid diethylamide).
Miscellaneous: cough/cold medicines: diphendydramine (Benadryl®), chlorpheneramine maleate+ codeine+alcohol (Corex®). Iodex®, Vicks®, Amrutanjan® and correction fluid (Whitener).

UNIT II: Theories of consequences of drug abuse

a) Theories of drug abuse: Physiological theory. Psychological theory. Sociological theory.

b) Consequences of drug abuse: For individuals, families, society and economy.

Unit III: Extent and nature of the problem


UNIT IV: Prevention and management of drug abuse


Suggested readings:

5. 2003 National Household survey of Alcohol and Drug Abuse. New Delhi, Clinical Epidemiological Unit, AIIMS, 2004

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THIRD SEMESTER
पंथी समाधी
समेत 2017 दे सिविलिएट सदन

बुधं अंब्र: 50
वित्तिशी: 45
सिविलिएट अभिमेत: 05
भाग: 3 पृष्ठ

मिलियाम
1. आपूर्तिव पंथी बदीथों सीआं चेत्वों मा बेकरह ता अपिथेत
2. चेत्वों पंथी बड़ीगामा ता अपिथेत
3. चेत्वों पंथी संशोधन दा संपूर्ण सीघर दे क्षत्र/लागाएत

वेगम
1. मुं-मेंटेंटा, मेघ: डा माउटेड सिंध डिब्बे चेत्वों 15 बडिएगामा, पुर्वाव: पंथी थुर्केसिंग थभावित दिवधि, चैंटिज़ार्ट (अम्बे बीत मिठ- गुलधे दा हृद उत्तुर कार हूँ, दिब्बिगे-मकस, धेरा, पुर्व मिठ- नामत पंथी, माउटेड विघम दे हृदीवां, राय दा भितन्दी शकर, रति रम्ब चाँदी- दणा मेंग्र, देवी दी हलवाद, पंथी दा सुधर, माउटेड मिठ- भ, दैन भिस्संक, उमा दा सीघर अवेल भिस्संक पीडी- अभ्यं काम माण हूँ, नेल बेड़े अवेल भिस्संक चैंटिज़ार्नां)
2. पंथी बड़ी-विद्याघात, मेघ: थूतिलभाग सिंध डिब्बे चेत्वों 6 बडिएगामा
(केपू तिबोम भाषीम, मकवानी ही रिहब, भभका, दूताव, बमीच अवेल देवे दे हृद दब बडिएगामा)

पीढ़िट भाव बीभ
1. मुं-मेंटेंटा प्राकंव डिब्बे पृशंसा माउट विभागितमा (2 डिब्बे 1) 5 अंब्र
2. विशो दिव बडिएगा दा माध सां वेंची बढ़ (3 डिब्बे 1) 5 अंब्र
3. विध बडिएगा रा माध (पंथी बड़ी-विद्याघात डिब्बे) 5 अंब्र
4. विशो दिव बडी सां बडिएगामा रा सीघर, दक्षिण अवेल बंजारगार (अम्बे बीत मिठ, पूँभए मिठ, भिस्संक पीडी, माउटेड निध, माउटेड मिठ दीव (अवेल बुखार मिठ विंग)

(2 डिब्बे 1, दिव बडी अवेल दिव बडिएगामा डिब्बे)
5. संध: मभान, मभान्पाल अवेल अभ्यं दक्षिण दाबी टाउन संधियुट (500 मांसग घंटा) 7 अंब्र
6. मध भूमी (10 अभ्यं दक्षिण-वेंची डिब्बे 7) 7 अंब्र
7. रेड भूमी (10 अभ्यं दक्षिण डिब्बे 8) 8 अंब्र

विशेष शेट: मधमे पाठ वृम लकी दब्बे डिब्बे 6 पीढीभाग
OR

HISTORY AND CULTURE OF PUNJAB – I

Instructions for the paper-setter and candidates: (for paper in Semester I & II)

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. Each question will carry 1 mark. 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 : 06 Marks
   Explanatory Note : 04 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 the Punjab region.
Pedagogy: Lectures, library work and discussions.

UNIT I

UNIT II
4. Society and Culture under Maurayas
5. Society and Culture under Gupta
6. Cultural Reorientation: main features of Bhakti; origin and development of Sufism

UNIT III
9. Institution of Khalsa: new baptism; significance

UNIT IV
10. Changes in Society in 18th century: social unrest; emergence of misls and institutions-rakhi, gurmata, dal khalsa.
11. Society and Culture of the people under Maharaja Ranjit Singh

Suggested Readings:
1. Joshi, L.M (ed.): History and Culture of the Punjab, Part-I, Publication Bureau, Punjabi University, Patiala, 1989 (3rd edn.)
5. Basham, A.L: The Wonder That was India, Rupa Books, Calcutta (18th rep.), 1992
6. Sharma, B.N: Life in Northern India, Munshi Ram Manohar Lal, Delhi, 1966
7. Singh, Kirpal: History and Culture of 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 up to class 10th.
B. Ward of / and Defence Personnel and Central Govt. Employee/Employees who are transferrable on all India basis.
D. Foreigners
Information System Design and Implementation
BCA-16-303

External Marks: 65
Internal Marks: 10

Time Duration: 3 Hrs.
Number of Lectures: 60

Objective: To teach the students about the various aspects of Information Systems to be developed, their analysis and design. The motive is to aware the learners about pre requisite of software development and associated paradigms. After completing this course students will be able to analyse and design information systems.

Note:
1. The Question Paper will consist of Four Units.
2. Examiner will set total of NINE questions comprising TWO questions from each Unit and ONE compulsory question of short answer type covering whole syllabi.
3. The students are required to attempt ONE question from each Unit and the Compulsory question.
4. All questions carry equal marks unless specified.

UNIT - I
The Role of System Analyst: Skills of a System Analyst, various roles of the Analyst.

UNIT - II
System Planning and the Initial Investigation: Bases for planning in system analysis, Initial investigation, determining the users information requirements, Problem definition and Project Initiation, Background Analysis, Fact Finding, Fact Analysis, Determination of Feasibility.
Tools of Structured Analysis: Various tools of structured analysis: Data flow diagram (DFD), Data Dictionary, Decision tree and structured English, Decision table, Pros and cons of each tools.

UNIT - III
UNIT - IV


Suggested Readings:

Essential :

Further Reading :
Objective: To teach the students the essential techniques of Numerical Methods. After completing this course students will be able to solve various Scientific and Engineering fields’ problems.

Note:

i. The Question Paper will consist of Four Units.

ii. Examiner will set total of NINE questions comprising TWO questions from each Unit and ONE compulsory question of short answer type covering whole syllabi.

iii. The students are required to attempt ONE question from each Unit and the Compulsory question.

iv. All questions carry equal marks unless specified.

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

vi. Log tables are allowed. Students may be provided the same for computation.

UNIT - I

Data Representation and Computer Arithmetic: Introduction, Concept of Exact and Approximate Numbers, Concept of Significant digits, Representation of Numbers in Memory, Storage of Integer Numbers: Signed Representation, 1’s Complement Representation, 2’s Complement Representation, Floating Point Numbers and their storage, Floating Point Arithmetic, Normalization and their consequences, Errors, Measures of Accuracy: Absolute Error, Relative Error and Percentage Error, Error types: Data Errors, Truncation Errors, Round-Off Errors, Computational Errors, Rules, Relationship between Relative Error and Significant digits and Error Propagation: Error Propagation in Addition Operation, Subtraction Operation, Multiplication Operation and Division Operation.

UNIT - II


UNIT - III

**Interpolation:** Introduction, Lagrange Interpolation, Inverse Interpolation, Finite Differences: Forward Differences, Backward Differences, Divided Differences, Difference Tables: Forward Difference Table, Backward Difference Table, Divided Difference Table, Observations regarding Difference Tables, Newton’s Method of Interpolation: Newton’s Forward Difference Interpolation Formula, Newton’s Backward Difference Interpolation Formula, Newton’s Divided Difference Interpolation Formula.

**Numerical Integration:** Introduction, Newton-Cotes Integration Formulae: Trapezoidal Rule, Simpson’s 1/3rd Rule, Simpson’s 3/8th Rule.

UNIT - IV

**Approximation:** Approximation of functions: Taylor Series Representation, Chebyshev Polynomials.

**Solution of Ordinary Differential Equations:** Introduction, Euler’s Method, Runga–Kutta Methods: 2nd order & 4th order, Predictor Corrector Methods: Modified Euler’s Method.

Suggested Readings:

**Essential :**

**Further Reading :**
3. S.S. Shastry : Introductory Methods of Numerical Analysis
4. H.C. Saxena : Finite differences and Numerical Analysis
Data Structures

BCA-16-305

External Marks: 65
Internal Marks: 10

L T P Cr
6 - - 3

Time Duration: 3 Hrs.

Number of Lectures : 60

Objective: To teach the students various data structures and the basic operations performed using them. At the end of course the student will have complete knowledge of data structures, thus will be able to use them for solving real world problems.

Note:

i. The Question Paper will consist of Four Units.
ii. Examiner will set total of **NINE** questions comprising **TWO** questions from each Unit and **ONE** compulsory question of short answer type covering whole syllabi.
iii. The students are required to attempt **ONE** question from each Unit and the Compulsory question.
iv. All questions carry equal marks unless specified.

UNIT - I

Basic Concepts: Introduction to Complexity, Data Structure and Data Structure operations. Applications of Data Structure, Basic data Structures.
Arrays: Introduction, Types of Array, Memory representation, Applications and operations.
Stacks: Introduction, memory representation, Applications and operations

UNIT - II

Linked List: Operations:-traversing, searching, inserting, deleting, operations on header linked list, circular linked list, doubly linked list, memory representation, Applications, polynomial manipulation.
Queue: Introduction, Types, Memory Representation and Applications.

UNIT - III

Trees – Definition and Basic concepts, Representation in Contiguous Storage, Binary Tree, Binary Tree Traversal, Searching, Insertion and deletion in Binary trees, Binary Search tree.
Graphs: Introduction, Memory Representation, Graph Traversal (DFS and BFS)

UNIT - IV

Searching: Binary and Linear Search;
Sorting: Bubble sort, Insertion sort, Selection sort, Merge Sort, Quick sort.
Comparison of various Searching and Sorting algorithms.
Suggested Readings:

Essential:

Further Reading:
FOURTH SEMESTER
पंजाबी समाप्ति

अप्रैल / जून 2018 ते सिजीडिएट रहती

फ़ायद: 50
विअलु: 45
टिकटलस भागभेंट: 05
भाग: 3 पृष्ठ

मिश्रनम

1. आयुर्विज्ञान पंजाबी वर्गों दीक्षा वेंद्रीमान विभागांना आप्रवश्यकता
2. वेंद्रीमान पंजाबी वर्गां आप्रवश्यकता
3. वेंद्री पंजाबी संघर्ष देने संघध सीप्स देने तंत्र/मेनेजमेंट

वेदन

1. मुंबई-मंडळ, मंगल: डा.मलिंडस मिश्र विचि चेंबरीमान 15 विभागां, पुरुषस्व: पंजाब पुलिसबिन्दुमात्र पश्चीमेंट सीडिपो, चंद्रपाड
(डीविएनपी प्रति धक्का - पंजाब, बंगाल, हां थीर, तंगस घण्टे धनाढ्यी भाग पंडे, धूंध धूंध कंप, सेवक भने सैं, खिद वानि- संही बुधी, वी उन्डतूर नश्ता बनाळ रा, विवाह, पंघ-विवाह, आमी संघर्ष मध्ये, तीत, मुखोद धारा- भइं दी वडीबी, तास (वेशी तस्करां 'चे) अते तास (भांति मुक्त इतिहास वे) विभागां)

2. पंजाबी व्यापा-विवाह, मंगल: गुडिक्कालस मिराब विचि चेंबरीमान 6 विभागां, पुरुषस्व: पंजाब पुलिसबिन्दुमात्र पश्चीमेंट सीडिपो, पश्चीमरत सीडिपो, चंद्रपाड
(राष्ट्रीय राज, बौही, बौही मह वेंद्र-मंगल वे, तीती बोधशारण, सिंचि मान विवाह वे अते धक्का रेंडररा वर्गां)

प्रशिक्षण अध्यापिका

1. मुंबई-मंडळ पुलिसव विचि पुरुषस्व मान्त्रिक प्रशिक्षण (2 विचि 1) 5 अंक
2. विश्व विचि वानि देने महाने वेंद्री वार (4 विचि 1) 5 अंक
3. विचि वानि देने मह (पंजाबी व्यापा-विवाह विभाग) 5 अंक
4. विश्व विचि वार माने विवाहवार देने महाने, उपरी अते जवादर (श्रेणी भवान, भवान, मुखोद धारा, बांधियार विभाग, तुरबीन अंक) 8 अंक
(श्रेणी भवान, भवान, मुखोद धारा, बांधियार विभाग, तुरबीन अंक अते वानि विभाग मंगल)
(2 विचि 1, विचि वार माने विचि वानि विवाहवार विचि)

5. वानि राज महाभंग मुंबई-रेंट (2 विचि 1) 8 अंक
6. वानि विचि विभाग (2 विचि 1) 7 अंक
7. विश्व विचि विभाग 7 अंक
विभाग रेंट: म्हणे पर धूंध धूंध कंप धक्का दिचि 6 पीवीसी
OR

HISTORY AND CULTURE OF PUNJAB-I

Instructions for the paper-setter and candidates: (for paper in Semester I & II)

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. Each question will carry 1 mark. 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 : 06 Marks
   - Explanatory Note : 04 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 the Modern times.
Pedagogy: Lectures, library work and discussions.

UNIT I

1. Introduction of Colonial Rule in Punjab: Annexation of Punjab, Board of Administration
2. Western Education: Growth of Education and rise of middle classes
3. Agrarian Development: Commercialization of agriculture; canalization and colonization.
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 Movement.
8. Gurudwara Reform Movement: Jallianwala Bagh; foundation of SGPC and Akali Dal; Morchas; Activities of Babbar Akalis.
9. Struggle for Freedom: activities of revolutionaries - Naujawan Bharat Sabha; Kirti Kissan Movement; participation in mass movements - non co-operation, civil disobedience, Quit India.

UNIT IV
10. Partition and its Aftermath: resettlement; rehabilitation
12. MAP(Physical geographical map of undivided Punjab): Major Historical places: Delhi, Kurukshetra, Jaito, Ferozepur, Ambala, Amritsar, Lahore, Ludhiana, Qadian, Jalandhar, Lyallpur, Montgomery.

Suggested Readings:

1. Singh, Kirpal : History and Culture of the Punjab, Part II (Medieval Period), Publication Bureau, Punjabi University, Patiala 1990(3rd edn.).
Software Project Management  
BCA-16-403  

Objectives:  
To teach the students important concepts, terms related to various phases during the development of a software project. At the end of the course the student will be able to apply software project management techniques to manage a software project.

Note:  
i. The Question Paper will consist of Four Units.  
ii. Examiner will set total of NINE questions comprising TWO questions from each Unit and ONE compulsory question of short answer type covering whole syllabi.  
iii. The students are required to attempt ONE question from each Unit and the Compulsory question.  
iv. All questions carry equal marks unless specified.

UNIT - I  
Software Project Management and Process Groups: Introduction to project and project management, role of a project manager in project management, a system view of project management, Stakeholders of Project, Project phases and product life cycles, Evolution of software economics, Improving software economics: reducing product size, software processes, team effectiveness, automation through software environments, Principles of modern software management.

UNIT - II  
Project Integration: Integration Management: Project selection, project management plans, project execution, project monitoring and controlling, integrated change control;

UNIT - III  
Scope Management: Scope Management: project scope statement, Work breakdown structures, Scope verification and scope control, Process instrumentation and seven core metrics.  
Software management disciplines: Iterative process planning, Project organizations and responsibilities, Process automation.
UNIT - IV

Project Scheduling: Time Management: Importance of Project Schedules, Sequencing and Scheduling Activity, Project Network Diagrams, PERT/CPM, Gantt charts, Critical chain scheduling.


Suggested Readings:

Essential:

Further Reading:
Operating System Concepts and Linux
BCA-16-404

Objective: The objective of the module is to create skills of students in operating systems concepts and Linux commands.

Note:

i. The Question Paper will consist of Four Units.
ii. Examiner will set total of **NINE** questions comprising **TWO** questions from each Unit and **ONE** compulsory question of short answer type covering whole syllabi.
iii. The students are required to attempt **ONE** question from each Unit and the Compulsory question.
iv. All questions carry equal marks unless specified.

UNIT - I

Operating Systems (OS): Introduction, its needs and services, Types of OS: Multi-user, Multitasking, Multiprocessing and Real time Operating Systems, Parallel systems, Distributed systems

UNIT - II

Deadlocks: Necessary and sufficient conditions for Deadlocks, Introduction to methods for handling deadlocks, deadlock detection and recovery
Memory Management: Logical vs Physical address space, Swapping, Introduction to Paging, Segmentation, Virtual Memory-Demand paging, Introduction to Page Replacement algorithms: FIFO, Optimal Page replacement and LRU

UNIT - III

Introduction to Linux: Linux’s shell, Kernel, Features of Linux, History, Minimum system requirements, Boot and Root disks, Starting and stopping Linux system, passwords, logging in and out, terminal Handling commands: who, Understanding wildcards, Environment variables.
Understanding I/O Redirection and Piping: Introduction, cut, paste, sort, tee; Introduction to Regular Expressions and grep.
Using file system: Introduction to common types of files, Filenames, Introduction to different types of directories: Parent, Subdirectory, Home directory; rules to name a directory, Important directories in Linux File System, Absolute and relative filenames,
creating files and directories, listing files (ls), pwd, moving and copying files (mv, cp),
moving directories, Removing files and directories, using wildcards with files and
directories, File and directory permissions using relative and absolute methods, Changing
group ownership, umask settings

UNIT - IV

Process Management: Types of processes, ps, bg, fg, nice, kill.
Understanding System Administration activities: Superuser (su) command, Taking backups
using tar, Managing disk space, Mounting and Un-mounting file system, Managing users,
Managing printers with lpd, mknod, lpc, lpq, lprm.
Vi editor: starting vi, vi modes, inserting text, quitting vi, deleting text, copying and moving
text, searching and replacing text.

Suggested Readings:

Essential :

Further Reading :
3. Brinch, Hansen, Operating System Principles, Prentice Hall of India
**Database Management System**  
**BCA-16-405**

**Objective:** This course aims at giving the students the insight of the underlying concepts of database management system and implement them using Database software.

**Note:**

i. The Question Paper will consist of Four Units.

ii. Examiner will set total of **NINE** questions comprising **TWO** questions from each Unit and **ONE** compulsory question of short answer type covering whole syllabi.

iii. The students are required to attempt **ONE** question from each Unit and the Compulsory question.

iv. All questions carry equal marks unless specified.

**UNIT - I**


Data Base Systems Concepts and Architecture: Data Models, Schemas and Instances, DBMS architecture and Data Independence, Data base languages & Interfaces, DBMS functions and component modules.


**UNIT - II**

Relational Data Model: Relational model concepts, Integrity constraints over Relations, Relational Algebra - Basic Operations.


Relational Data Base Design: Functional Dependencies, Decomposition, Desirable properties of decomposition, Normal forms based on primary keys (1 NF, 2 NF, 3 NF and BC NF).

**RDBMS:** Terminology, The 12 Rules (Codd’s Rule) for an RDBMS.

**UNIT - III**

**Understanding SQL-1:** Data Types, 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, creation and deletion of Views, Managing privileges with Grant and Revoke Command, COMMIT and ROLLBACK, Functions: Character Functions, Date Functions, Group Functions

UNIT - IV

Understanding SQL-II: Querying Multiple Tables using Equi-Joins, Cartesian Joins, Outer Joins, Self-Joins, SET Operators: Union, Intersect, Minus; Introduction to Nested Queries

Suggested Readings:

Essential

Further Reading:
FIFTH SEMESTER
SYLLABI AND COURSES OF READING FOR BACHELOR OF COMPUTER APPLICATIONS

Paper Code : BCA – 501
Paper Title : Entrepreneurship Development Programme
Theory Marks : 90
Number of Lectures : 100
(45 minutes duration)

Objectives : EDP aims 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, EDP focuses on rural entrepreneurs, women, SC/ST and minority communities etc.

Note :

i. The Question Paper will consist of Four Units.
ii. Examiner will set total of NINE questions comprising TWO questions from each Unit and ONE compulsory question of short answer type covering whole syllabi.
iii. The students are required to attempt ONE question from each Unit and the Compulsory question.
iv. All questions carry equal marks unless specified.

v. The student can use only Non-programmable & Non-storage type of Calculator.
vii. Log tables are allowed. Students may be provided the same for computation.

UNIT – I

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)

UNIT – II

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)

UNIT – III

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


(No. of Periods : 25)
UNIT - IV


(No. of Periods : 25)

Suggested Readings :


Objectives:

- To study the various graphical techniques.
- To study the multimedia concepts and various I/O technologies.
- To enable the students to develop creative graphics based programs.

Note:

i. The Question Paper will consist of Four Units.
ii. Examiner will set total of **Nine** questions comprising **Two** questions from each Unit and **One** compulsory question of short answer type covering whole syllabi.
iii. The students are required to attempt **One** question from each Unit and the Compulsory question.
iv. All questions carry equal marks unless specified.
v. **The student can use only Non-programmable & Non-storage type of Calculator.**
vi. **Log tables are allowed. Students may be provided the same for computation.**

### UNIT - I

**Computer Graphics:**

1. A Survey of Computer Graphics:
   (No. of Periods: 15)

2. Overview of Graphics Systems:
   (No. of Periods: 10)
UNIT - II

   (No. of Periods : 10)

   (No. of Periods : 15)

UNIT - III

Multimedia Technology :


7. Applications:
   (No. of Periods : 25)

UNIT - IV


9. Studying features and use of Multimedia Image Processing authoring tools like Photoshop and Macromedia Director.  
   (No. of Periods : 25)
Suggested Readings:

Essential:

Further Reading:
Objectives: Student will learn and revise the knowledge acquired previously. Logic, Relations and Functions, Algebraic Functions and Graph Theory will be introduced in this course.

Note:

i. The Question Paper will consist of Four Units.
ii. Examiner will set total of **NINE** questions comprising **TWO** questions from each Unit and **ONE** compulsory question of short answer type covering whole syllabi.
iii. The students are required to attempt **ONE** question from each Unit and the Compulsory question.
iv. All questions carry equal marks unless specified.
v. **The student can use only Non-programmable & Non-storage type of Calculator.**
vi. **Log tables are allowed. Students may be provided the same for computation.**

**UNIT - I**

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)

**UNIT - II**

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)

**UNIT - III**


UNIT - IV


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)

Suggested Readings :


Paper Code : BCA - 504
Paper Title : Computer Lab.-1 : Based on BCA - 502
Theory Marks : 90
SIXTH SEMESTER
Objectives: This course will help the student to design & develop websites using HTML, Javascript and JAVA programming language.

Note:

i. The Question Paper will consist of Four Units.

ii. Examiner will set total of **NINE** questions comprising **TWO** questions from each Unit and **ONE** compulsory question of short answer type covering whole syllabi.

iii. The students are required to attempt **ONE** question from each Unit and the Compulsory question.

iv. All questions carry equal marks unless specified.

**UNIT - I**

1. Review of forms in HTML, *Introduction to cascading style sheets (CSS), defining and applying CSS.*
   Java Script: Features, tokens, data types, variables, operations, control structs, likes, strings, arrays, functions, core language, objects, client side objects, event handling. Applications related to client side form validation.
   (No. of Periods: 25)

**UNIT - II**

2. Fundamentals of Java: Java Vs. C++, Byte Code, Java virtual machine, constants, variables, data types, operators, expressions, control structures, defining class, creating objects, accessing class members, constructions, method overloading. *String handling.*
   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.
   (No. of Periods: 25)

**UNIT - III**

3. 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)
UNIT - IV


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.


(No. of Periods : 25)

Suggested Readings :

Essential :

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

Note:

i. The Question Paper will consist of Four Units.

ii. Examiner will set total of **NINE** questions comprising **TWO** questions from each Unit and **ONE** compulsory question of short answer type covering whole syllabi.

iii. The students are required to attempt **ONE** question from each Unit and the Compulsory question.

iv. All questions carry equal marks unless specified.

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

vi. **Log tables are allowed. Students may be provided the same for computation.**

**UNIT - I**


   (No. of Periods: 25)

**UNIT - II**

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. Concept of Bus, data movement among registers, data movement from/to memory.

   (No. of Periods: 25)

**UNIT - III**

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, Assembly language programs:-To add/subtract two numbers, Program to input/output one character, Program to demonstrate the use of subroutines. Register Transfer Language and micro-operations; Language to represent conditional data transfer, Arithmetic and logical operations along with register transfer.

   (No. of Periods: 25)
UNIT - IV


   (No. of Periods : 25)

**Suggested Readings:**

**Essential:**


**Further Reading:**

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

Note:

i. The Question Paper will consist of Four Units.

ii. Examiner will set total of **NINE** questions comprising **TWO** questions from each Unit and **ONE** compulsory question of short answer type covering whole syllabi.

iii. The students are required to attempt **ONE** question from each Unit and the Compulsory question.

iv. All questions carry equal marks unless specified.

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

vi. Log tables are allowed. Students may be provided the same for computation.

**UNIT - I**

1. Introduction to Data Communication: Data Communication fundamentals, Simplex, Half-Duplex, Full-Duplex

2. Physical Layer: Transmission Media, Switching, ISDN & its services, Multiplexing, Modems.

   (No. of Periods: 15)

**UNIT - II**


   (No. of Periods: 15)

**UNIT - III**


   (No. of Periods: 15)

**UNIT - IV**

Suggested Readings:

Essential:

Further Reading:

BCA: 604 Minor Project and Seminar

Paper Code: BCA – 604
Paper Title: Based on BCA – 601
Theory Marks: 90

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, (90 Marks for Project and Seminar Viva; and 10 Marks for Internal Assessment).