FACULTY OF ENGINEERING AND TECHNOLOGY

Syllabus

For

BACHELOR OF VOCATION (B.VOC.)
(SOFTWARE DEVELOPMENT)
(Semester: I – VI)

Session: 2019–20

GURU NANAK DEV UNIVERSITY
AMRITSAR

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   Defaulters will be prosecuted.

   (ii) Subject to change in the syllabi at any time.
       Please visit the University website time to time.
Bachelor of Vocation (B.Voc.)  
( Software Development ) Semester System

Eligibility:
+2 pass in any stream.

Scheme of Syllabus

Semester – I:

<table>
<thead>
<tr>
<th>Paper No.</th>
<th>Paper</th>
<th>M. Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper–I</td>
<td>Fundamentals of Information Technology</td>
<td>50</td>
</tr>
<tr>
<td>Paper–II</td>
<td>Web Technology</td>
<td>50</td>
</tr>
<tr>
<td>Paper–III</td>
<td>Programming using C Language</td>
<td>50</td>
</tr>
<tr>
<td>Paper–IV</td>
<td>Lab I: Office Automation and Web Technology</td>
<td>75</td>
</tr>
<tr>
<td>Paper–V</td>
<td>Lab II: Programming in C Language</td>
<td>75</td>
</tr>
<tr>
<td>Paper–VI</td>
<td>Communication Skills in English – I</td>
<td>50</td>
</tr>
<tr>
<td>Paper–VII</td>
<td>Punjabi (Compulsory) / **ਸੰਘਿਤੀ ਪੰਜਾਬੀ / ** Punjab History &amp; Culture (From Earliest Times to C 320)</td>
<td>50</td>
</tr>
<tr>
<td>Paper–VIII</td>
<td>* Drug Abuse: Problem, Management and Prevention (Compulsory Paper)</td>
<td>50</td>
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Total: 400

Semester – II:

<table>
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<tr>
<th>Paper No.</th>
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<tbody>
<tr>
<td>Paper–I</td>
<td>Internet Applications</td>
<td>50</td>
</tr>
<tr>
<td>Paper–II</td>
<td>Data Structure</td>
<td>50</td>
</tr>
<tr>
<td>Paper–III</td>
<td>Object Oriented Programming</td>
<td>50</td>
</tr>
<tr>
<td>Paper–IV</td>
<td>Lab I: Programming in C++</td>
<td>75</td>
</tr>
<tr>
<td>Paper–V</td>
<td>Lab II: Practical based on Data Structure</td>
<td>75</td>
</tr>
<tr>
<td>Paper–VI</td>
<td>Communication Skills in English – II (Th. 35+ Pr. 15)</td>
<td>50</td>
</tr>
<tr>
<td>Paper–VII</td>
<td>Punjabi (Compulsory) / **ਸੰਘਿਤੀ ਪੰਜਾਬੀ / ** Punjab History &amp; Culture (C 320 TO 1000 B.C.)</td>
<td>50</td>
</tr>
<tr>
<td>Paper–VIII</td>
<td>* Drug Abuse: Problem, Management and Prevention (Compulsory Paper)</td>
<td>50</td>
</tr>
</tbody>
</table>

Total: 400

Note: * Marks of this Paper will not be included in the Total Marks.  
** (Special Paper in lieu of Punjabi Compulsory)  
(For those students who are not domicile of Punjab)
### Semester–III:

<table>
<thead>
<tr>
<th>Paper No.</th>
<th>Paper</th>
<th>M. Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper–I</td>
<td>Database System</td>
<td>50</td>
</tr>
<tr>
<td>Paper–II</td>
<td>Java Programming</td>
<td>50</td>
</tr>
<tr>
<td>Paper–III</td>
<td>Software Engineering Methodology</td>
<td>50</td>
</tr>
<tr>
<td>Paper–IV</td>
<td>Lab I: Lab based on SQL &amp; PL/SQL</td>
<td>50</td>
</tr>
<tr>
<td>Paper–V</td>
<td>Lab II: Java Programming</td>
<td>50</td>
</tr>
<tr>
<td>Paper–VI</td>
<td>Minor Project: Software Module based on Web Technology/Database/ Programming Language</td>
<td>150</td>
</tr>
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</table>

**Total: 400**

### Semester–IV:

<table>
<thead>
<tr>
<th>Paper No.</th>
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</thead>
<tbody>
<tr>
<td>Paper–I</td>
<td>Open Source Software</td>
<td>50</td>
</tr>
<tr>
<td>Paper–II</td>
<td>Information Security</td>
<td>50</td>
</tr>
<tr>
<td>Paper–III</td>
<td>Operating System</td>
<td>50</td>
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<tr>
<td>Paper–IV</td>
<td>Lab I: Practical based on Android Development</td>
<td>100</td>
</tr>
<tr>
<td>Paper–V</td>
<td>Lab II: Open Source Software Tool</td>
<td>75</td>
</tr>
<tr>
<td>Paper–VI</td>
<td>Lab III: Practical based on ASP.Net using C#</td>
<td>75</td>
</tr>
<tr>
<td>Paper–VII (ESL-221)</td>
<td>* Environmental Studies</td>
<td>100</td>
</tr>
</tbody>
</table>

**Total: 400**

* Marks of Paper EVS will not be included in Grand Total.
Bachelor of Vocation (B.Voc.)
(Software Development) Semester System

**Semester-V:**

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<tr>
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<tbody>
<tr>
<td>Paper-I</td>
<td>Software Project Management and Business Solution</td>
<td>50</td>
</tr>
<tr>
<td>Paper-II</td>
<td>Software Re-engineering</td>
<td>50</td>
</tr>
<tr>
<td>Paper-III</td>
<td>Software Testing &amp; Quality Assurance</td>
<td>50</td>
</tr>
<tr>
<td>Paper-IV</td>
<td>Lab I: Soft Skills in IT</td>
<td>50</td>
</tr>
<tr>
<td>Paper-V</td>
<td>Lab II: System and Network Administration</td>
<td>100</td>
</tr>
<tr>
<td>Paper-VI</td>
<td>Lab III: Software Testing (Case Tools)</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>400</strong></td>
</tr>
</tbody>
</table>

**Semester-VI:**

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<tr>
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<th>M. Marks</th>
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</thead>
<tbody>
<tr>
<td>Paper-I</td>
<td>Project Dissertation (Industrial Training and Project in Software/IT industry)</td>
<td>400</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>400</strong></td>
</tr>
</tbody>
</table>
Paper–I: Fundamentals of Information Technology

Time: 3 Hrs. Max. Marks: 50

Instructions for the Paper Setters:-
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A–D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section–A
An overview of computer system: Block diagram of Computer, Components of Computers, and advantages of computer.

[6 Hrs.]

Section–B
I/O and storage Devices: Keyboard, mouse, pens, touch screens, Bar Code reader, joystick, Monitor, printers, plotters, Primary storage (Storage addresses and capacity, type of memory), Secondary storage, Magnetic storage devices and optical storage devices

[12 Hrs.]

Section–C
Number System: decimal, binary, octal, hexadecimal numbers and their–conversions

[12 Hrs.]


[8 Hrs.]

Programming Tools: Problem Analysis, Program Constructs (Sequential, Decision, Loop), Algorithms, Flowcharts, Pseudo code, Decision table.

[12 Hrs.]

Section–D
Data Communications: Introduction to Data Communication, Network and its types, topologies, Transmission Media and modes.

[10 Hrs.]

References:
3. Computer Fundamentals, P.K. Sinha
Paper–II: Web Technology

Time: 3 Hrs.                                      Max. Marks: 50

Instructions for the Paper Setters:-
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Section–A
Introduction to Web Development
Webpage, Website, Static Website, Dynamic Website, Web Servers, Web Browsers

[10 Hrs.]

Introduction to HTML/DHTML

Section–B
[15 Hrs.]

Introduction to JavaScript:

[10 Hrs.]

Section–C
Introduction to Dreamweaver

[15 Hrs.]
Section-D

Purchasing a Domain Name & Web Space
Domain Name & Web Space, Getting a Domain Name & Web Space (Purchase or Free), Uploading the Website to Remote Server.

[10 Hrs.]

Suggested Readings / Books:
1. Web Enabled Commercial Application Development HTML (Ivan Bayross)
4. The Essential Guide to Dreamweaver CS4 David Powers
Bachelor of Vocation (B.Voc.)
(Software Development) Semester – I

Paper III: Programming using C Language

Time: 3 Hrs.  Max. Marks: 50

Instructions for the Paper Setters:-
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section–A
C language preliminaries: Introduction to C, Identifiers and Key Words, Data types, Constants, Variables, Expressions, Statements,.

[10 Hrs.]

Operators and I/O functions: Arithmetic operators, Unary operators, Relational Operators, Logical Operators, Assignment and Conditional Operators, getchar, putchar, printf, gets, puts

[10 Hrs.]

Section–B
Control Statements: While, Do–while and for statements, Nested loops, If–else, Switch, Break – Continue statements.

[10 Hrs.]

Functions: Brief overview, types, defining, accessing functions, passing arguments to function, specifying argument data types, function prototypes, recursion.

[8 Hrs.]

Section–C
Arrays and Pointers Defining, processing an array, passing arrays to a function, multi–dimensional arrays, Introduction to pointers, Operations on pointers, Pointers and array.

[10 Hrs.]
Section–D

Structure and Union: A simple structure, specifying the structure, defining a structure variable Accessing Structure member, Structure within structure, union, difference between structure and union.

[6 Hrs.]

Data Files: Opening, closing, creating, processing and unformatted data files.

[6 Hrs.]

References:
1. Let us C, Yashwant Kanetkar
2. C – programming E. Balagurusamy Tata McGraw Hill
3. Complete reference with C Tata McGraw Hill
Paper–IV: Lab – I: Office Automation and Web Technology

Time: 3 Hrs.                                          Max. Marks: 75

Practical based on Office Automation and Web Technology

- **Office Automation**: MS Word, MS Excel, MS PowerPoint
- **Web Technology**: HTML, DHTML, Dreamweaver
Bachelor of Vocation (B.Voc.)
(Software Development) Semester – I

Paper-V: Lab – II: Programming in C Language

Time: 3 Hrs.  Max. Marks: 75

Practical based on Programming in C language
Instructions for the Paper Setters:-
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The syllabus is divided in four sections as mentioned below:

Section–A

Reading Skills: Reading Tactics and strategies; Reading purposes–kinds of purposes and associated comprehension; Reading for direct meanings.

Section–B

Reading for understanding concepts, details, coherence, logical progression and meanings of phrases/expressions.

Activities:
- Comprehension questions in multiple choice format
- Short comprehension questions based on content and development of ideas

Section–C

Writing Skills: Guidelines for effective writing; writing styles for application, personal letter, official/business letter.

Activities:
- Formatting personal and business letters.
- Organising the details in a sequential order

Section–D

Resume, memo, notices etc.; outline and revision.

Activities:
- Converting a biographical note into a sequenced resume or vice-versa
- Ordering and sub-dividing the contents while making notes.
- Writing notices for circulation/boards

Recommended Books:
- Oxford Guide to Effective Writing and Speaking by John Seely.
- English Grammar in Use (Fourth Edition) by Raymond Murphy, CUP
Bachelor of Vocation (B.Voc.)
(Software Development) Semester – I

PAPER-VII: भौतिकी (लघुसमी)

भाग : 3 पृष्ठ
पृष्ठ-बंध का अंश : 50

मैत्रा-

आज्ञा अलम (बहुविध अध्ययन),
(संघ मूलतन सीता अनुभव मिश्र मणिपु)
यादृच्छिक तेज पृष्ठ-पुस्तक मिज़ह, आभूषणता।
(भूमा मानिस लेखाकार्य, मन्त्)

मैत्रा-

दिशावर्तन जापा (दिशावर्तन खेत-मंदिर"
मिश्र मानिसक, खेती मानिस अग्रभार, सुधा"
(खेड़ १ ते ६)
(दिशावर्तन व मन्त्र, निधि-नीली)

मैत्रा-

(२) पत्रकार चरण

(३) पत्रकार पद जो पूर्ण हो चूड़ा

मैत्रा-

(२) भौतिकी पृष्ठ भिड़ूँ : ईर्ष्यत्व भाषा, ईर्ष्यत्व साधन दे दिशावर्तन, मन्त्र, निधि, नीली।

(३) भौतिकी बेलोसिविधा : भौतिकी नस्त भाषा, भौतिकी साधन दे दिशावर्तन, मन्त्र, निधि, नीली।

(भूमा बेलोसिविधा) नशा दे नभाभाषी वृद्ध, भूमा बेलोसिविधा भाषा भाषा, भूमा बेलोसिविधा भाषा भाषा।

भव-वेद अधे नतिभिन्नव भूली उरविदानुः

1. पृष्ठ पृष्ठ दे चतु क्षण वेदी। उद क्षण वेदी दे पृष्ठ पृष्ठ वाह करो।
2. दिशावर्तन दे स्तव पृष्ठ पृष्ठ चतु उठ। उद क्षण वेदी दे स्तव पृष्ठ पृष्ठ वाह करो।
3. यथावत् पृष्ठ दे घस्तन्त्र अंश उठ।
4. भेदित पृष्ठ वेद वेद खेत वेद चतु उं पृष्ठच् ती ध्वनि भो ध्वनि दे ध्वनि चतु ध्वनि पृष्ठ पृष्ठ वेदी वेदी वेदी।
PAPER-VII: भौतिकी पाठ्यक्रम
(In lieu of Compulsory Punjabi)

वर्ग-चौथा

मैलमत-दे
पैटी भौती, भौतक बृह, पैट बिंदी रखे हटल अवे पैट हिंच घट
देखे हटल अवे भुजा (भौतिकी सार-भाषान)
स्रोत (बिंदी, बिंदी, भौती) : पैट अवे हटते

मैलमत-सी
भौतिकी सार-भाषान : भौतिकी सार-भाषान
(भौतिकी सार, भौजवड़ सार, भौजवज्ज सार, भौजवड़ सार, भौजवड़ अवे पिठितू)

मैलमत-बी
हिंदी वाले की भौतिकी विषयक सी: घराण, स्थान, दिमाग-रागे, पैटी अवे देत मैं पैटियों भांदे राह मैलमत

मैलमत-बी
उड़े दे मैं फिरां दे लां, घाता भीतिकां दे लां, उड़ाए दे लां, दिचां दे मैं उड़ निखाड़ी मधन दिच

भव-रूख अवे परीक्षाध्याय अंक 1 उपरिदिश

1. पूर्ण धनल दे छप बना देखी। उन बना दिख से पूर्ण पैड़े नारहते।
2. दिखितात्मक दे हमें पूर्ण पूर्ण बनाये गए। उन बना दिख से हिंच पूर्ण दिखानी दै।
3. पूर्ण पूर्ण दे विषयक भाषा गए।
4. पैट बने हटते सारे में रखे ने पूर्ण दे पैट अवे दें दें दें दें दें दें-पूर्ण हिंच वर्ता सर के।
PAPER–VII: Punjab History & Culture (From Earliest Times to C 320)

(Special Paper in lieu of Punjabi Compulsory)
(For those students who are not domicile of Punjab)

Time: 3 Hours

Instructions for the Paper Setters:-
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section–A
1. Physical features of the Punjab and its impact on history.
2. Sources of the ancient history of Punjab

Section–B
3. Harappan Civilization: Town planning; social, economic and religious life of the Indus Valley People.

Section–C
5. Social, Religious and Economic life during Rig Vedic Age.

Section–D
7. Teachings and impact of Buddhism
8. Jainism in the Punjab

Suggested Readings:
PAPER – VIII: DRUG ABUSE: PROBLEM, MANAGEMENT AND PREVENTION
(COMPELLSORY PAPER)

PROBLEM OF DRUG ABUSE

Time: 3 Hours
Max. Marks: 50

Instructions for the Paper Setters:-
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Section – A

Meaning of Drug Abuse:

Section – B

Consequences of Drug Abuse for:
- Family : Violence.
- Society : Crime.
- Nation : Law and Order problem.

Section – C

Management of Drug Abuse:
Medical Management: Medication for treatment and to reduce withdrawal effects.

Section – D

Psychiatric Management: Counselling, Behavioural and Cognitive therapy.
Social Management: Family, Group therapy and Environmental Intervention.
References:

Bachelor of Vocation (B.Voc.) 
(Software Development) Semester – II

Paper–I: Internet Applications

Time: 3 Hrs.  Max. Marks: 50

Instructions for the Paper Setters:-
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section–A
Introduction: About internet and its working, business use of internet, services offered by internet, evaluation of internet, internet service provider (ISP), windows environment for dial up networking (connecting to internet), audio on internet, internet addressing (DNS) and IP addresses). [12 Hrs.]

Section–B
E–Mail: Concept, Advantage and disadvantage, structure of an e–mail message, working of e–mail (sending and receiving messages), managing e–mail (creating new folder, deleting messages, forwarding messages, filtering messages) Implementation of outlook express. [12 Hrs.]

Internet Protocol: Introduction, file transfer protocol (FTP), Gopher, Telnet, other protocols like HTTP and TCP/IP. [6 Hrs.]

Section–C
WWW: Introduction, working of WWW, Web browsing (opening, viewing, saving and printing a web page and bookmark). [6 Hrs.]

Intranet and Extranet Introduction, application of intranet, business value of intranet, working of intranet, role of extranet, working of extranet, difference between intranet and extranet. [10 Hrs.]
Section–D

Search Engine: About search engine, component of search engine, working of search engine, difference between search engine and web directory. [6 Hrs.]

News Group: Basic concepts of newsgroup, connecting to a news server, subscribing to newsgroup, organization of articles, reading messages, posting replies and new messages, managing newsgroup and messages. [8 Hrs.]

References:
Internet and its Applications by Ackerman.
Internet – The Complete Reference
Paper-II: Data Structure

Time: 3 Hrs.                                                                                 Max. Marks: 50

Instructions for the Paper Setters:-
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section–A
Basic Data Structure: Introduction to Data Structure, Common Operations on Data Structures, Algorithm Complexity, Big O Notation, Time – Space trade off between Algorithms. [7 hrs.]

Arrays: Define Array, Representing Arrays in Memory, Various Operations on Linear Arrays, Linear Search and Binary Search [8 hrs.]

Section–B
Linked Lists: Types of Linked Lists, Representing Linked Lists in Memory, Advantages of using Linked Lists over Arrays, Various Operations on Linked Lists. [8 hrs.]

Stacks: Description of STACK structure, Implementation of Stack using Arrays and Linked Lists, Push and Pop operations of Stack, Applications of Stacks – Converting Arithmetic expression from infix notation to polish and their subsequent evaluation [8 hrs.]

Section–C
Queues: Description of queue structure, Implementation of queue using arrays and linked lists, Insertion and Deletion operations in Circular Queue, description of priorities of queues, dequesues. [8 hrs.]

Trees: Description of Tree Structure and its Terminology, Binary Trees and Binary Search trees and their representation in Memory [7 hrs.]

Section–D
Graphs: Description of Graph Structure, Implement Graphs in Memory using Adjacency Matrix and Adjacency list, BSF and DFS traversal of the graph [7 hrs.]

Sorting techniques: Sorting Algorithms, Bubble Sort, Insertion Sort, Selection Sort, Merge Sort [7 hrs.]

References:
2. Tanenbaum, Data Structure using C.
Paper-III: Object Oriented Programming

Time: 3 Hrs.                                                                 Max. Marks: 50

Instructions for the Paper Setters:-
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section–A
Object-Oriented Programming Concepts: Introduction, comparison between procedural programming paradigm and object-oriented programming paradigm, basic concepts of object-oriented programming, Data Types, Operators and Control Structures. [8 hrs.]
Standard Input/output: Concept of streams, hierarchy of console stream classes, input/output using cin (>>) and cout (<<), formatting output using ios class functions, flags and manipulators. [4 hrs.]

Section–B
Functions: Defining and accessing function, passing arguments to functions, inline functions, static function and storage classes. [4 hrs.]
Classes and Objects: Specifying a class, creating class objects, accessing class members, access specifiers, static members, friend function, empty classes and nested classes. [8 hrs.]

Section–C
Pointers and Dynamic Memory Management: dynamic memory management using new and delete operators, pointer to an object, this pointer, pointer related problems - dangling/wild pointers, null pointer, memory leak and allocation failures. [6 hrs.]
Constructors and Destructors: Need for constructors and destructors, Default Constructor, Parameter Constructor and Copy Constructor, destructors, constructors and destructors with static members. [8 hrs.]
Section-D

**Inheritance:** Introduction, defining derived classes, types of inheritance: Multiple, Multilevel, Hybrid and Hierarchical Inheritance, virtual base class, overriding member functions. [8 hrs.]

**Operator Overloading:** Overloading operators, rules for overloading operators, overloading of various operators: unary and binary operators, type conversion: implicit and Explicit. [7 hrs.]

**Polymorphism:** Concept of binding - early binding and late binding, function overloading, virtual functions, pure virtual functions, abstract classes, virtual destructors. [7 hrs.]

**Recommended Books:**
Paper–IV: Lab – I: Programming in C++

Time: 3 Hrs.  
Max. Marks: 75

Practical based on Programming in C++
Bachelor of Vocation (B.Voc.)
(Software Development) Semester – II

Paper-V: Lab – II: Practical based on Data Structure

Time: 3 Hrs.                                      Max. Marks: 75

Practical based on Data Structure
PAPER–VI: COMMUNICATION SKILLS IN ENGLISH – II

Time: 3 Hours

Instructions for the Paper Setters:-
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Course Contents:

SECTION–A
Listening Skills: Barriers to listening; effective listening skills; feedback skills.
Activities: Listening exercises – Listening to conversation, News and TV reports

SECTION–B
Attending telephone calls; note taking and note making.
Activities: Taking notes on a speech/lecture

SECTION–C
Speaking and Conversational Skills: Components of a meaningful and easy conversation; understanding the cue and making appropriate responses; forms of polite speech; asking and providing information on general topics.
Activities: 1) Making conversation and taking turns
2) Oral description or explanation of a common object, situation or concept

SECTION–D
The study of sounds of English,
Stress and Intonation,
Situation based Conversation in English,
Essentials of Spoken English.
Activities: Giving Interviews

PRACTICAL / ORAL TESTING

Course Contents:-
1. Oral Presentation with/without audio visual aids.
2. Group Discussion.
3. Listening to any recorded or live material and asking oral questions for listening comprehension.

Questions:-
1. Oral Presentation will be of 5 to 10 minutes duration (Topic can be given in advance or it can be student’s own choice). Use of audio visual aids is desirable.
2. Group discussion comprising 8 to 10 students on a familiar topic. Time for each group will be 15 to 20 minutes.

Note: Oral test will be conducted by external examiner with the help of internal examiner.
PAPER-VII: पूजनीय (खर्र्मी)

महत्त्व : 3 पेंटे
चुक्त अंक : 50
प्रति-चूँत्र अंके प्रति-प्रमाणन

मैवम्ल-ए

आउन भलस्व (बजर्नी बना),
(मं. मुलिड्स भीड अने चलिखान बिभक्त मंडू)
गूँध तालव टेक जुड़ीज़ूकरूती, नोकीभादा।
(क्षित-प्रमुख, पावत चिंतवत)

मैवम्ल-ढी

हिंदुत्तम जापा (हिंदुत्तम वेंच-मंगूरो)
संघ. म.म.आलेक,
पैक्ती समाधु पुजमत, सुधिमाता। (लेख 7 औं 12)
(मच, लिभट मैडी)

मैवम्ल-मी

(कृ) मधु-विलाद अत्रे मधु तत्वता : पवित्रमण, भूमेचे मंडकम
(अ) गंगा गुजान

मैवम्ल-ढी

(कृ) मधु पुजा
(अ) भूमेचे अत्रे अध्याय

अन्व-पूज अत्रे पवित्रमण छठी उपविन्दुं

1. पूजन पूजादे छठ बजा गाड़तो। उत बजा दिलें दे पूजन पूजो नयने गाडतो।
2. हिंदूमालिका हे बंध बन भूम चतुरे रहता। उत बजा दिलें दिव पूजन लगभी दे।
3. उतेह भूम दे वेछार अंच रहता।
4. पौधा मैंॅ चतुरे विन्दु नेवत बने अं पूजनों ची बॉय आं लंह दे लंह चतु बुध-पूजनों दिल्ल नच मसमा रहता।
PAPER-VII: भूमिविद्या (In lieu of Compulsory Punjabi)

मात्रा: 3 पृष्ठे  वर्ल अंब्र: 50

प्रथ-वृह

मैचमह-चि

मधत्त भूमिविद्या: पहाड़ अदेव दवउ (सच, पहाड़ल, विज्ञन, हिमीय संकेत, विज्ञन रिमेयट, स्थियाव, स्वेत भड़े दिम्हिय)

मैचमह-मी

भूमिविद्या घटवश : भूमिविद्या नद-घड़ा
(१) मणपत लव, मणगुड़ लव अदेव भमंड लव (पहाड़ भड़े दवउ)
(अ) विभागीय लव, पुरातन लव भड़े गुलभी लव (पहाड़ भड़े दवउ)

मैचमह-डी

वैज्ञानिक उपदश (विभागीय अदेव घड़ौ)
अधष्ट भड़े भूगोले

अव-स्मृत अदेव व्यविषयव झडी उपग्रह

1. पृथ्वी घड़ौ दे चाच बजा गेहौं. उद बजावा विचें दे पृथ्वी घड़ौं लदो।
2. विभागीय दे ब्रह्म पृथ्वी पृथ्वी बचवे गल. उद बजावा विचें दें पृथ्वी समानी दे।
3. देवेव पृथ्वी दे वक्य अदव गल।
4. घेलेब मैंट बजवे दव नेबत चाचे उं पृथ्वी दी घड़ पृथ्वी अंडी दौं. दौं. संघ बजा धिंध-पृथ्वी दिशा दन मदर गल।
PAPER–VII: Punjab History & Culture (C 320 to 1000 B.C.)
(Special Paper in lieu of Punjabi compulsory)
(For those students who are not domicile of Punjab)

Time: 3 Hours  Max. Marks: 50

Instructions for the Paper Setters:

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section–A

1. Alexander’s Invasion and its Impact
2. Punjab under Chandragupta Maurya and Ashoka.

Section–B

3. The Kushans and their Contribution to the Punjab.
4. The Panjab under the Gupta Empire.

Section–C

5. The Punjab under the Vardhana Emperors
6. Socio-cultural History of Punjab from 7th to 1000 A.D.

Section–D

7. Development of languages and Education with Special reference to Taxila
8. Development of Art & Architecture

Suggested Readings:

1. L. M Joshi (Ed), History and Culture of the Punjab, Art-I, Punjabi University, Patiala, 1989 (3rd Edition)
PAPER – VIII: DRUG ABUSE: PROBLEM, MANAGEMENT AND PREVENTION
(COMPULSORY PAPER)

DRUG ABUSE: MANAGEMENT AND PREVENTION
Time: 3 Hours

Max. Marks: 50

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section – A
Prevention of Drug abuse:
Role of family: Parent child relationship, Family support, Supervision, Shaping values, Active Scrutiny.

Section – B
School: Counselling, Teacher as role-model. Parent-teacher-Health Professional Coordination, Random testing on students.

Section – C
Controlling Drug Abuse:
Media: Restraint on advertisements of drugs, advertisements on bad effects of drugs, Publicity and media, Campaigns against drug abuse, Educational and awareness program

Section – D
References:

Paper-I: Database System

Time: 3 Hrs.  Max. Marks: 50

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section A
Basic Concepts: Database, Database system, Database management system, Data independence, advantages and disadvantages, 3 level architecture and mapping DBMS vs. File System, DBA’s Role, RDBMS.

Data Models: Relational model, Hierarchical model, Network model, comparison of these model, An overview of the E/R Model, E/R diagrams, Database design with the E/R model

Section B
Normalization: Introduction to Normalization, Need of Normalization, various forms of Normalization (1NF, 2NF, 3NF, BCNF)
SQL: Introduction, Data Definition Language (DDL), Data Manipulation Language (DML), Data Control Language (DCL) statements, Views, Sub–queries, Access Rights.

Section C
Transaction Management and Concurrency Control: Introduction to Transaction Processing, Properties of Transactions, Concurrency Control, purpose of concurrency control, Techniques for concurrency control,

Section D


Reference Books:
Bachelor of Vocation (B.Voc.)
(Software Development) Semester – III

Paper-II: Java Programming

Time: 3 Hrs. \hspace{1cm} \textbf{Max. Marks: 50}

\textbf{Note:}
\textbf{Instructions for the Paper Setters:-}
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

\textbf{Section A}
\textbf{Introduction:} Evolution of Java, Importance of JAVA to Internet, Features of JAVA, Byte code, Object Oriented Approach, Data types, Type Conversion and Casting, One Dimensional and Multidimensional arrays

\textbf{Section B}
\textbf{Classes:} Class Fundamentals, Declaring objects, introducing methods, constructors, this keyword, Overloading constructors, Recursion, Nested and Inner classes.
\textbf{Inheritance:} Basics, Creating Multilevel hierarchy, Method Overriding, Abstract Classes.

\textbf{Section C}
\textbf{Packages and Interface:} Packages, Access Protection, Importing Packages, Interfaces, Defining, Implementing, Applying Interfaces, Extending Interfaces
\textbf{Exception Handling:} Fundamentals, Exception Types, uncaught exceptions, try and catch.

\textbf{Section D}
\textbf{Applets:} Applet Basics, Applet Architecture, Applet: Display, Repaint, Parameter Passing, wrapper class

\textbf{Recommended Books:}
\begin{itemize}
  \item Patrick Naughton & Herbert Schildt: The Complete Reference Java 2, Tata McGraw Hill Edition
  \item Paul Deitel & Harvey Deitel: Java, How to Program, PHI Learning Private Limited Edition.
  \item Balagurusamy: Programming in JAVA.
\end{itemize}
Paper–III: Software Engineering Methodology

Time: 3 Hrs.  Max. Marks: 50

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section A


Software Project Management: Introduction, Project planning, metrics for project size estimation, project estimation techniques, Cost estimation, COCOMO model, Project scheduling and milestones

Section B

Software Requirement Specification (SRS): Definition, Problem analysis, structuring information, Data flow diagram and data dictionary, structured analysis, Characteristics and component of (SRS), Metrics of SRS

Section C

Software Design and coding: Introduction, classification of design activities and design Methodologies, Cohesion and Coupling, Verification and validation, approaches to software design, introduction to various design approaches, Structured programming, Coding standards and guidelines.

Section D

Software Testing and metrics: Software Testing, levels of testing, Test case design, Design metrics, Coding metrics, Technical metrics, testing metrics.

Software maintenance: Definition need and types of Software maintenance


References:
2. Flecher and Hunt: Software Engineering and CASE: Bridging and Culture G
4. Fundamentals of Software Engineering, Rajib Mall
Bachelor of Vocation (B.Voc.)
(Software Development) Semester – III

Paper–IV: Lab-I: SQL & PL/SQL

Time: 3 Hrs.  Max. Marks: 50

Practical Lab based on SQL and PL/SQL
Bachelor of Vocation (B.Voc.)
(Software Development) Semester – III

Paper–V: Lab – II: Java Programming

Time: 3 Hrs.  Max. Marks: 50

Practical based on Programming in JAVA
Minor Project: Software Module based on Web Technology/Database/ Programming Language.

**General Instructions:**
1. The Software Module of the Minor Project shall be submitted to the College/Institute till 15\textsuperscript{th} November.
2. The minor project shall be developed in groups, consisting of at most two students in a group.
3. The evaluation of the Minor Project (Software Module) shall be done by one external examiner appointed by the University and one internal examiner from College (as per other practical examination)
Bachelor of Vocation (B.Voc.)  
(Software Development) Semester – IV

Paper–I: Open Source Software

Time: 3 Hrs.  
Max. Marks: 50

Instructions for the Paper Setters:–
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section A
Organization and Management of OSS: OSS development Process, Taboos and norms in OSS development, The OSS development life cycle

Section B
Development of OSS: Methodology and languages used to develop open source products, Cross Platform code

Section C

Section D
Open Source Database: MYSQL: Introduction, Setting up account, starting, terminating and writing your own SQL programs, Record selection Technology, Working with strings, Date and Time, Sorting Query Results, Generating Summary, Working with metadata Using sequences, MYSQL and Web.

Books Recommended:
- Chris Dibona, Danese Cooper, Mark Stone, Open Sources 2.0, The Continuing Evolution, O’ Reilly, 2006.
Bachelor of Vocation (B.Voc.)
(Software Development) Semester – IV

Paper–II: Information Security

Time: 3 Hrs.  Max. Marks: 50

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section A


Section B
Viruses and Malicious Code: Program security, Control against Program Threats


Section C
Database Security: Security requirements, Reliability and Integrity, Protecting sensitive data, multilevel security

Security in Networks Threats, Attacks, Protocol Flaws, Impersonation, Spoofing, Denial of Service, Networks security control,

Security in Networks Firewalls, Intrusion Detection, Secure e-mail

Section D

Legal and Ethical Issues: Protection of data and Information Laws, Employees rights, Software failure, Computer Crime, Privacy and Ethics

References:
Bachelor of Vocation (B.Voc.)  
(Software Development) Semester – IV

Paper–III: Operating System

Time: 3 Hrs.  
Max. Marks: 50

Instructions for the Paper Setters:-
Eight questions of equal marks (specified in the syllabus) are to be set, two in each of the four sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

Section A


Section B
CPU–Scheduling: Basic concepts, scheduling criteria, scheduling algorithms, algorithm evaluation.


Section C
Memory Management: Background, Logical v/s Physical address space, mapping, continuous allocation, paging, segmentation.

Virtual Memory: Background, demand paging, performance of demand paging, page replacement, page replacement algorithms, allocation of frames, thrashing.

Section D
Secondary Storage Structures: Disk structures, Disk scheduling, Disk Reliability.
Deadlocks: System Model, Deadlock characterization, methods for handing deadlocks, Deadlocks Prevention, Deadlock avoidance, Deadlock detection, Recovery from deadlock, combined approach to deadlock handling.

References:
Paper-IV: Lab I: Practical based on Android Development

Time: 3 Hrs.                                      Max. Marks: 100

Practical based on Application Development in Android
Bachelor of Vocation (B.Voc.)
(Software Development) Semester – IV

Paper–V: Lab – II: Open Source Software Tools

Time: 3 Hrs.                                   Max. Marks: 75

Practical based on Open Source Software Tools
Case Study of Open Source Software like PHP, PYTHON, PERL & Mozilla
Bachelor of Vocation (B.Voc.)
(Software Development) Semester – IV

Paper-VI: Lab – III: Practical based on ASP.Net using C#

Time: 3 Hrs.  Max. Marks: 75

Practical based on ASP.Net using C#
Teaching Methodologies
The Core Module Syllabus for Environmental Studies includes classroom teaching and field work. The syllabus is divided into 8 Units [Unit-1 to Unit-VII] covering 45 lectures + 5 hours for field work [Unit-VIII]. The first 7 Units will cover 45 lectures which are classroom based to enhance knowledge skills and attitude to environment. Unit-VIII comprises of 5 hours field work to be submitted by each candidate to the Teacher in-charge for evaluation latest by 15 December, 2019.

Exam Pattern:
End Semester Examination- 75 marks
Project Report/Field Study- 25 marks [based on submitted report]
Total Marks- 100

The structure of the question paper being:

Part-A, Short answer pattern with inbuilt choice – 25 marks
Attempt any five questions out of seven distributed equally from Unit-1 to Unit-VII. Each question carries 5 marks. Answer to each question should not exceed 2 pages.

Part-B, Essay type with inbuilt choice – 50 marks
Attempt any five questions out of eight distributed equally from Unit-1 to Unit-VII. Each question carries 10 marks. Answer to each question should not exceed 5 pages.

Project Report / Internal Assessment:

Part-C, Field work – 25 marks [Field work equal to 5 lecture hours]
The candidate will submit a handwritten field work report showing photographs, sketches, observations, perspective of any topic related to Environment or Ecosystem. The exhaustive list for project report/area of study are given just for reference:

1. Visit to a local area to document environmental assets: River / Forest/ Grassland / Hill / Mountain / Water body / Pond / Lake / Solid Waste Disposal / Water Treatment Plant / Wastewater Treatment Facility etc.
2. Visit to a local polluted site – Urban / Rural / Industrial / Agricultural
3. Study of common plants, insects, birds
4. Study of tree in your areas with their botanical names and soil types
5. Study of birds and their nesting habits
6. Study of local pond in terms of wastewater inflow and water quality
7. Study of industrial units in your area. Name of industry, type of industry, Size (Large, Medium or small scale)
8. Study of common disease in the village and basic data from community health centre
9. Adopt any five young plants and photograph its growth
10. Analyze the Total dissolved solids of ground water samples in your area.
11. Study of Particulate Matter (PM$_{2.5}$ or PM$_{10}$) data from Sameer website. Download from Play store.
12. Perspective on any field on Environmental Studies with secondary data taken from Central Pollution Control Board, State Pollution Control Board, State Science & Technology Council etc.
Unit-I

The multidisciplinary nature of environmental studies
Definition, scope and importance, Need for public awareness

(2 lectures)

Unit-II

Natural Resources: Renewable and non-renewable resources:
Natural resources and associated problems.
(a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
(b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
(c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
(d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
(e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.
(f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles.

(8 Lectures)

Unit-III

Ecosystems
- Concept of an ecosystem
- Structure and function of an ecosystem
- Producers, consumers and decomposers
- Energy flow in the ecosystem
- Ecological succession
- Food chains, food webs and ecological pyramids
- Introduction, types, characteristic features, structure and function of the following ecosystem: Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries)

(6 Lectures)

Unit-IV

Biodiversity and its conservation
- Introduction – Definition: genetic, species and ecosystem diversity
- Biogeographical classification of India
- Value of biodiversity: consumptive use, productive use, social, ethical aesthetic and option values
- Biodiversity at global, national and local levels
- India as a mega-diversity nation
- Hot-spots of biodiversity
- Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts
- Endangered and endemic species of India
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

(8 Lectures)
Unit-V

Environmental Pollution:
Definition:
- Causes, effects and control measures of Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear pollution
- Solid waste management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution
- Pollution case studies
- Disaster management: floods, earthquake, cyclone and landslides

(8 Lectures)

Unit-VI

Social Issues and the Environment
- From unsustainable to sustainable development
- Urban problems and related to energy
- Water conservation, rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns. Case studies.
- Environmental ethics: Issues and possible solutions
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
- Wasteland reclamation
- Consumerism and waste products
- Environmental Protection Act, 1986
- Air (Prevention and Control of Pollution) Act, 1981
- Water (Prevention and control of Pollution) Act, 1974
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation
- Public awareness

(7 Lectures)

Unit-VII

Human Population and the Environment
- Population growth, variation among nations
- Population explosion – Family Welfare Programmes
- Environment and human health
- Human Rights
- Value Education
- HIV / AIDS
- Women and Child Welfare
- Role of Information Technology in Environment and Human Health
- Case Studies

(6 Lectures)
Field Work

- Visit to a local area to document environmental assets River / forest / grassland / hill / mountain
- Visit to a local polluted site – Urban / Rural / Industrial / Agricultural
- Study of common plants, insects, birds
- Study of simple ecosystems-pond, river, hill slopes, etc

(Field work equal to 5 lecture hours)

References:

2. Down to Earth, Centre for Science and Environment, New Delhi.
Paper-I: Software Project Management and Business Solutions

**Time:** 3 Hrs.  
**Max. Marks:** 50

**Note:**
(i) The paper setter is required to set eight questions in all and the candidates will be required to attempt any five questions out of these eight questions. All questions will carry equal marks.
(ii) The student can use only Non-programmable & Non-storage type calculator.

**Introduction to Software Project Management:** Project Definition, Contract Management, Activities covered By Software Project Management, Overview of Project Planning, Stepwise Project Planning.  
[6 Hrs.]

[8 Hrs.]

[12 Hrs.]

[12 Hrs.]

**Managing People and Organizing Teams** Introduction, Understanding Behavior, Organizational Behaviour: A Background, Selecting The Right Person For The Job, Instruction In The Best Methods, Motivation, The Oldham, Hackman Job Characteristics Model, Working In Groups, Becoming A Team, Decision Making, Leadership, Organizational Structures, Stress, Health And Safety, Case Studies.  
[12 Hrs.]

**Business Solutions** Information system in Global Business: How Businesses use Information system, ethical and Social Issues in IS, DSS: Enhancing Decision making, Business Intelligence tools, E-commerce: types, web based business, ERP, EDI  
[10 Hrs.]

**Recommend Books**
Bachelor of Vocation (B.Voc.)  
(Software Development) Semester – V  

Paper-II: Software Re-engineering  

Time: 3 Hrs.  
Max. Marks: 50  

Note:  
(i) The paper setter is required to set eight questions in all and the candidates will be required to attempt any five questions out of these eight questions. All questions will carry equal marks.  
(ii) The student can use only Non-programmable & Non-storage type calculator.  

Introduction to Software Re-engineering: Software Reengineering and its importance, goals of reengineering, Software reengineering process model, software reengineering tools and Business process reengineering: Business processes, A BPR Model. [12 Hrs.]  


Reverse Engineering: Need of reverse engineering, Reverse engineering process, Reverse engineering to understand data, Reverse engineering user interfaces, Tools for reverse engineering. [8 Hrs.]  

Restructuring: Code restructuring: Characteristics of unstructured code, Characteristics of structured code, Restructuring problems, Data restructuring (Data reengineering): Data reengineering process, Data problems, Approaches: Data cleanup, Data extension, Data migration, Need for Data migration, data migration process, Tools for restructuring. [12 Hrs.]  


Forward Engineering: Introduction to forward engineering, Goals of forward engineering, Forward engineering for client/server applications, Tools for forward engineering, forward engineering v/s reverse engineering [7 Hrs.]  

Software Reuse: Software Reuse Success Factors, Reuse Driven Software Engineering in a Business, Use case Components, Object Components, Layered Architecture. [6 Hrs.]  

RECOMMENDED BOOKS:  
Paper-III: Software Testing & Quality Assurance

Time: 3 Hrs.  
Max. Marks: 50

Note:
(i) The paper setter is required to set eight questions in all and the candidates will be required to attempt any five questions out of these eight questions. All questions will carry equal marks.
(ii) The student can use only Non-programmable & Non-storage type calculator.


References
Verbal Communication: Public speaking, group discussion, presentation skills, interview skills, listening and observation skills.

Written communication: project proposals, Technical reports, grammar and vocabulary for effective technical writing, Technical resume

Personality Development: Personal grooming, Dressing for interviews, dressing for office, leadership, group dynamics and team building, conflict management, Critical Thinking, Reflective Thinking and Decision making, problem Solving Skills and Time management

Technical etiquettes: Etiquettes in office as well as social settings, email etiquettes, telephone etiquettes.
Paper-V: Lab II: System and Network Administration

Time: 3 Hrs.                      Max. Marks: 100

Lab based on System and Network Administration
Bachelor of Vocation (B.Voc.)
(Software Development) Semester – V

Paper-VI: Lab III: Software Testing (Case Tools)

Time: 3 Hrs. Max. Marks: 100

Practical Based on Software Testing (Case Tools)
General Instructions:

Report based on Industrial Training and project shall be submitted to the College/Institute till April 30.

The evaluation of the work shall be done by the following panel of examiners prior to the theory examination:
(a). Internal Examiner
(b). Head/ Head Nominee of coordinating department of the college for this UGC scheme
(c). External Examiner (to be appointed by the University)