# FACULTY OF VISUAL ARTS AND PERFORMING ARTS

## SYLLABUS

### FOR

# BACHELOR OF VOCATION (B.Voc.)
# DATA SCIENCE AND SOFTWARE ENGG.
## (Semester: I – IV)

### Session: 2019-20



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# GURU NANAK DEV UNIVERSITY, AMRITSAR.

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# BACHELOR OF VOCATION (B.VOC.) (DATA SCIENCE AND SOFTWARE ENGG.) SEMESTER SYSTEM

**Eligibility:**
10+2 in any stream with 40% marks

## SCHEME

**SEMESTER – I:**

| Paper No. | Paper | M. Marks |
|---|---|---|
| Paper – I | Fundments of Information Technology *(Theory)* | 75 |
| Paper – II | Web Technologies (HTML/DHTML,CSS and Java Script) *(Theory)* | 75 |
| Paper – III | Programming Lab based on I.T.(MS-Office) *(Practical)* | 75 |
| Paper – IV | Programming Lab of HTML and DHTML.*(Practical)* | 75 |
| Paper – V | Communication Skills in English – I | 50 |
| Paper – VI | Punjabi (Compulsory) / ** ਮੁੱਢਲੀ ਪੰਜਾਬੀ / | 50 |
| | ** Punjab History & Culture (From Earliest Times to C 320) | |
| Paper – VII | * Drug Abuse: Problem, Management and | 50 |
| | Prevention (Compulsory Paper) | |

**SEMESTER – II:**

| Paper No. | Paper | M. Marks |
|---|---|---|
| Paper – I | PHP and MYSQL *(Theory)* | 75 |
| Paper – II | Responsive Web Design using XML, HTML 5 *(Theory)* | 75 |
| Paper – III | Programming Lab based on PHP and MySQL *(Practical)* | 50 |
| Paper – IV | Programming Lab of XHTML 5 and JavaScript *(Practical)* | 100 |
| Paper – V | Communication Skills in English – II (Th.35+Pr.15) | 50 |
| Paper – VI | Punjabi (Compulsory) / ** ਮੁੱਢਲੀ ਪੰਜਾਬੀ / | 50 |
| | ** Punjab History & Culture (C 320 TO 1000 B.C.) | |
| Paper – VII | * Drug Abuse: Problem, Management and | 50 |
| | Prevention (Compulsory Paper) | |

**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)**

BACHELOR OF VOCATION (B.VOC.) (DATA SCIENCE AND SOFTWARE ENGG.)
SEMESTER SYSTEM

| **Semester-III** | | |
|---|---|---|
| **S.No.** | **Subjects** | **Marks** |
| **General Education Component:** | | |
| Paper – I | Software Engineering *(Theory)* | 75 |
| Paper – II | Object-Oriented Analysis and Design using UML *(Theory)* | 75 |
| **Skill Component:** | | |
| Paper – III | DBMS with Oracle *(Theory)* | 75 |
| Paper – IV | Programming in core Java *(Theory)* | 75 |
| Paper – V | Programming Lab on SQL, PL/SQL and UML design | 75 |
| Paper – VI | Programming Lab on JAVA | 25 |
| | **Total Marks:** | **400** |
| **Semester-IV** | | |
| **S.No.** | **Subjects** | **Marks** |
| **General Education Component:** | | |
| Paper – I | Software Testing *(Theory)* | 75 |
| Paper – II | Software Quality Management *(Theory)* | 75 |
| **Skill Component:** | | |
| Paper – III | Advanced Java Programming  *(Theory)* | 75 |
| Paper – IV | Software Lab on Software Testing Tools *(Practical)* | 25 |
| Paper – V | Minor Project based on Java Programming *(Practical)* | 150 |
| Paper – VI | ESL-221 * Environmental Studies | 100 |
| | **Total Marks:** | **400** |

**\* Marks of Paper EVS will not be included in Grand Total.**

BACHELOR OF VOCATION (B.VOC.) (DATA SCIENCE AND SOFTWARE ENGG.)
SEMESTER – I

## PAPER – I: Fundamentals of IT

**Time: 3 Hours** **M. Marks: 75**

**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 to Computers and its Applications:**
- Computer as a system, basic concepts, functional units and their inter relation.
- Milestones in Hardware and Software.
- Batch oriented / on–line / real time applications.
- Application of computers.

### Section-B
**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, autoformatting, creating lists; Formatting pages: Using layout methods, creating headers and footers, Numbering pages, Changing page margins,

### Section-C
**Word Processing Package:** 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.
**Presentation Software using Microsoft Office:** Presentation overview, entering information, Presentation creation, opening and saving presentation, inserting audio and video.

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SEMESTER – I

**Section-D**

**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, Auto formatting cells and sheets, defining new auto format, 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 Data Pilot; Functions and Macros: using and editing existing macro, Creating Macros, Recording Macros, Running Macros.

**Reference Books:**

1. Computer Fundamentals – P.K. Sinha.
2. Introduction to Computers – N. Subramanian.
3. Introduction to Computers – Peter Norton McGraw Hill.
4. MS–Office _ BPB Publications.
5. Windows Based Computer Courses Gurvinder Singh & Rachhpal Singh, Kalyani Pub.
6. Ebooks at OpenOffice.org
7. A Conceptual Guide to OpenOffice.org3, 2nd Edition, R. Gabriel Gurley

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SEMESTER – I

## PAPER – II: Web Technologies
### (HTML/DHTML, CSS and Java Script)

**Time: 3 Hours** **M. Marks: 75**

**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 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.
**Introduction to HTML/DHTML**: 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.

## Section-B

**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.

## Section-C

**Document Object Model**:Event handling, Applications related to client side form validation.
**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.

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SEMESTER – I

## Section-D

**Introduction to Dreamweaver:** Understanding Workspace Layout, Managing Websites, Creating a Website, Using Dreamweaver Templates, Adding New WebPages, Text and Page Format, Inserting Tables, Lists, Images, Adding Links.

**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

**Reference Books:**
1. Wanger & Wyke: Java Script Unleased, Pearson Education, New Delhi.
2. Bayross, Ivan: HTML, DHTML, Java Script by BPB, Latest reprint
3. Schildt , Herbert: The Complete Reference Java 2, TMH, Latest reprint
4. Joseph Lowery: Adobe Dreamweaver CS5 Bible Paperback Edition

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SEMESTER – I

**Paper – III: (Programming Lab-I)**

**M. Marks: 75**

Programming Lab based on I.T. (MS-Office)

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SEMESTER – I

## Paper – IV: (Programming Lab-II)

**M. Marks: 75**

Programming Lab of HTML and DHTML.

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SEMESTER – I

## PAPER–V: COMMUNICATION SKILLS IN ENGLISH – I

**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.

**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.) (DATA SCIENCE AND SOFTWARE ENGG.)
## SEMESTER – I

## PAPER–VI: ਪੰਜਾਬੀ (ਲਾਜ਼ਮੀ)

ਸਮਾਂ : 3 ਘੰਟੇ                                                                 ਕੁਲ ਅੰਕ : 50

### ਪਾਠ-ਕ੍ਰਮ ਅਤੇ ਪਾਠ-ਪੁਸਤਕਾਂ

### ਸੈਕਸ਼ਨ-ਏ

**ਆਤਮ ਅਨਾਤਮ** (ਕਵਿਤਾ ਭਾਗ),
(ਸੰਪ. ਸੁਹਿੰਦਰ ਬੀਰ ਅਤੇ ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ)
ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।
(ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ, ਸਾਰ )

### ਸੈਕਸ਼ਨ-ਬੀ

**ਇਤਿਹਾਸਕ ਯਾਦਾਂ** (ਇਤਿਹਾਸਕ ਲੇਖ-ਸੰਗ੍ਰਹਿ)
ਸੰਪਾ. ਸ.ਸ.ਅਮੋਲ,
ਪੰਜਾਬੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ। (ਲੇਖ 1 ਤੋਂ 6)
(ਨਿਬੰਧ ਦਾ ਸਾਰ, ਲਿਖਣ-ਸ਼ੈਲੀ)

### ਸੈਕਸ਼ਨ-ਸੀ

(ੳ) ਪੈਰ੍ਹਾ ਰਚਨਾ

(ਅ) ਪੈਰ੍ਹਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉੱਤਰ।

### ਸੈਕਸ਼ਨ-ਡੀ

(ੳ) **ਪੰਜਾਬੀ ਧੁਨੀ ਵਿਉਂਤ** : ਉਚਾਰਨ ਅੰਗ, ਉਚਾਰਨ ਸਥਾਨ ਤੇ ਵਿਧੀਆਂ, ਸਵਰ, ਵਿਅੰਜਨ, **ਸੁਰ-ਪ੍ਰਬੰਧ।**

(ਅ) **ਭਾਸ਼ਾ ਵੰਨਗੀਆਂ** : ਭਾਸ਼ਾ ਦਾ ਟਕਸਾਲੀ ਰੂਪ, ਭਾਸ਼ਾ ਅਤੇ ਉਪ-ਭਾਸ਼ਾ ਦਾ ਅੰਤਰ, ਪੰਜਾਬੀ ਉਪਭਾਸ਼ਾਵਾਂ ਦੇ ਪਛਾਣ-ਚਿੰਨ੍ਹ।

## ਅੰਕ-ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1.  ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।

2.  ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।

3.  ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ ਅੰਕ ਹਨ।

4.  ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ-ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

# BACHELOR OF VOCATION (B.VOC.) (DATA SCIENCE AND SOFTWARE ENGG.)
## SEMESTER – I

## PAPER–VI: ਮੁੱਢਲੀ ਪੰਜਾਬੀ
### (In lieu of Compulsory Punjabi)

ਸਮਾਂ : 3 ਘੰਟੇ                                                             ਕੁਲ ਅੰਕ: 50

### ਪਾਠ-ਕ੍ਰਮ

### ਸੈਕਸ਼ਨ-ਏ

ਪੈਂਤੀ ਅੱਖਰੀ, ਅੱਖਰ ਕ੍ਰਮ, ਪੈਰ ਬਿੰਦੀ ਵਾਲੇ ਵਰਣ ਅਤੇ ਪੈਰ ਵਿਚ ਪੈਣ
ਵਾਲੇ ਵਰਣ ਅਤੇ ਮਾਤੁਵਾਂ (ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ)
ਲਗਾਖਰ (ਬਿੰਦੀ, ਟਿੱਪੀ, ਅੱਧਕ) : ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ

### ਸੈਕਸ਼ਨ-ਬੀ

ਪੰਜਾਬੀ ਸ਼ਬਦ-ਬਣਤਰ : ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ
(ਸਾਧਾਰਨ ਸ਼ਬਦ, ਸੰਯੁਕਤ ਸ਼ਬਦ, ਮਿਸ਼ਰਤ ਸ਼ਬਦ, ਮੂਲ ਸ਼ਬਦ, ਅਗੇਤਰ ਅਤੇ ਪਿਛੇਤਰ)

### ਸੈਕਸ਼ਨ-ਸੀ

ਨਿੱਤ ਵਰਤੋਂ ਦੀ ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ : ਬਾਜ਼ਾਰ, ਵਪਾਰ, ਰਿਸ਼ਤੇ-ਨਾਤੇ, ਖੇਤੀ ਅਤੇ ਹੋਰ ਧੰਦਿਆਂ ਆਦਿ ਨਾਲ
ਸੰਬੰਧਤ।

### ਸੈਕਸ਼ਨ-ਡੀ

ਹਫ਼ਤੇ ਦੇ ਸੱਤ ਦਿਨਾਂ ਦੇ ਨਾਂ, ਬਾਰ੍ਹਾਂ ਮਹੀਨਿਆਂ ਦੇ ਨਾਂ, ਰੁੱਤਾਂ ਦੇ ਨਾਂ, ਇਕ ਤੋਂ ਸੌ ਤਕ ਗਿਣਤੀ ਸ਼ਬਦਾਂ ਵਿਚ

## ਅੰਕ-ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1.  ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।

2.  ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ।
    ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।

3.  ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ ਅੰਕ ਹਨ।

4.  ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ-ਪ੍ਰਸ਼ਨਾਂ
    ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

BACHELOR OF VOCATION (B.VOC.) (DATA SCIENCE AND SOFTWARE ENGG.)
SEMESTER – I

### PAPER–VI: 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**                                                                       **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. 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.
4. The Indo-Aryans: Original home and settlements in Punjab.
#### Section–C
5. Social, Religious and Economic life during *Rig* Vedic Age.
6. Social, Religious and Economic life during Later Vedic Age.
#### Section–D
7. Teachings and impact of Buddhism
8. Jainism in the Punjab

**Suggested Readings:**

1. L. M Joshi (Ed.), *History and Culture of the Punjab*, Art-I, Patiala, 1989 (3rd Edition)

2. L.M. Joshi and Fauja Singh (Ed.), *History of Punjab*, Vol.I, Patiala 1977.

3. Budha Parkash, *Glimpses of Ancient Punjab*, Patiala, 1983.

4. B.N. Sharma, *Life in Northern India*, Delhi. 1966.

5. Chopra, P.N., Puri, B.N., & Das, M.N. (1974). *A Social, Cultural & Economic History of India,*  Vol. I, New Delhi: Macmillan India.

BACHELOR OF VOCATION (B.VOC.) (DATA SCIENCE AND SOFTWARE ENGG.)
SEMESTER – I

## PAPER – VII: DRUG ABUSE: PROBLEM, MANAGEMENT AND PREVENTION
## (COMPULSORY PAPER)

### PROBLEM OF DRUG ABUSE

**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

**Meaning of Drug Abuse:**
Meaning, Nature and Extent of Drug Abuse in India and Punjab.

### Section – B

**Consequences of Drug Abuse for:**
Individual      :      Education, Employment, Income.
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:**

1. Ahuja, Ram (2003), *Social Problems in India*, Rawat Publication, Jaipur.

2. Extent, Pattern and Trend of Drug Use in India, Ministry of Social Justice and Empowerment, Government of India, 2004.

3. Inciardi, J.A. 1981. *The Drug Crime Connection.* Beverly Hills: Sage Publications.

4. Kapoor. T. (1985) *Drug epidemic among Indian Youth*, New Delhi: Mittal Pub.

5. Kessel, Neil and Henry Walton. 1982, *Alcohalism. Harmond Worth:* Penguin Books.

6. Modi, Ishwar and Modi, Shalini (1997) *Drugs: Addiction and Prevention*, Jaipur: Rawat Publication.

7. National Household Survey of Alcohol and Drug abuse. (2003) New Delhi, Clinical Epidemiological Unit, All India Institute of Medical Sciences, 2004.

8. Ross Coomber and Others. 2013, *Key Concept in Drugs and Society.* New Delhi: Sage Publications.

9. Sain, Bhim 1991, *Drug Addiction Alcoholism,* Smoking obscenity New Delhi: Mittal Publications.

10. Sandhu, Ranvinder Singh, 2009, *Drug Addiction in Punjab*: A Sociological Study. Amritsar: Guru Nanak Dev University.

11. Singh, Chandra Paul 2000. *Alcohol and Dependence among Industrial Workers*: Delhi: Shipra.

12. Sussman, S and Ames, S.L. (2008). *Drug Abuse: Concepts, Prevention and Cessation,* Cambridge University Press.

13. Verma, P.S. 2017, "*Punjab's Drug Problem: Contours and Characterstics",* Economic and Political Weekly, Vol. LII, No. 3, P.P. 40-43.

14. World Drug Report 2016, United Nations office of Drug and Crime.

15. World Drug Report 2017, United Nations office of Drug and Crime.

BACHELOR OF VOCATION (B.VOC.) (DATA SCIENCE AND SOFTWARE ENGG.)
SEMESTER – II

## PAPER – I: PHP and MYSQL

**Time: 3 Hours**                                                                                      **M. Marks: 75**

**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 to PHP:** Evaluation of PHP, Basic Syntax, Defining variable and constant, Php Data type, Operator and Expression.
**Decisions and Loop:** Making Decisions, Doing Repetitive task with looping, Mixing Decisions and looping with Html.
**Function:** What is a function, Define a function, Call by value and Call by reference, Recursive function, String Creating and accessing, String Searching & Replacing String, Formatting String, String Related Library function.

### Section-B

**Array:** Anatomy of an Array, Creating index based and Associative array Accessing array, Element Looping with Index based array, Looping with associative array using each () and foreach(), Some useful Library function.
**Handling Html Form with PHP:** Capturing Form, Data Dealing with Multi-value filed, and Generating File uploaded form, redirecting a form after submission.

### Section-C

**Working with file and Directories:** Understanding file& directory, Opening and closing, a file, Coping, renaming and deleting a file, working with directories, Creating and deleting folder, File Uploading & Downloading.
**Session and Cookie:** Introduction to Session Control, Session Functionality What is a Cookie, Setting Cookies with PHP. Using Cookies with Sessions, Deleting Cookies, Registering Session variables, Destroying the variables and Session.

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## Section-D

**Database Connectivity with MySql:** Introduction to RDBMS, Connection with MySql Database, Performing basic database Operation (DML) (Insert, Delete, Update, Select), Setting query parameter, Executing query- Join (Cross joins, Inner joins, Outer Joins, Self joins).

**Exception Handling:** Understanding Exception and error, Try, catch, throw. Error tracking and debugging.

**Reference Books:**

1. Steve Suehring: PHP6 and MYSQL Bible, Wiley India edition
2. Steven Holzner PHP:The complete Reference, Tata McGraw Hill
3. Kelvin Tetroi Programming PHP
4. Elmarsi & Navathe, "Fundamentals of Database Systems" 4th Edition, 2004.
5. Paul DuBois, "MySQL Developer's Library", Fourth Edition, Addison Wesley.

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## PAPER – II: Responsive Web Design using XML, HTML 5

**Time: 3 Hours** **M. Marks: 75**

**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 to responsive web design and its tools**
**XML Introduction:** Introduction of XML- Some current applications of XML, Features of XML, Anatomy of XML document, The XML Declaration,  Element Tags-  Nesting and structure, XML text and text formatting element, Table element, Mark-up Element and Attributes, Document Type Definition (DTD), types.
**XML Programming**: XML Objects, Checking Validity, Understanding XLinks, XPointer, Event-driven Programming, XML Scripting.


### Section-B

**XML Presentation Technology:** Introduction, XML with Style Sheet Technologies- Concept of XSL, XML Schema, Importance of XML schema, Creating Element in XML Schema, XML Schema Types.

**XML Processor:** Introduction, Introduction of XML Processor- Components of XML processor, Concept of DOM and SAX,
### Section-C

Introduction of Java Script, JavaScript characteristics, Objects in Java Script, Dynamic HTML with Java Script.
**XMLHttpRequest**:  Introduction, XMLHttpRequest, The XMLHttpRequest Object, Events for the XMLHttpRequest Object, Request Object for XMLHttpRequest, Response Object for XMLHttpRequest.

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**Section-D**

**Introduction to HTML5 and Web Design:** How to Create a Simple Web Page, How to Format Your Text, Adding Web Links and Images, Creating Tables, Forms, Adding Styles and Classes to Your Web Pages, Borders, Backgrounds, and Floating Divs, Building Web Page Layouts with CSS, HTML5 – What Is It?, Adding Videos and Graphics with HTML5, HTML5 and CSS3 – Fonts and Effects, Introduction to Responsive Web Design with CSS3 and HTML5, Drawing with the Canvas Tag.

**Reference Books:**

1. Responsive Web Design with HTML5 and CSS3 By Ben Frain
2. Introduction to Web Development Using HTML 5 By Kris Jamsa
3. Introducing HTML5 By Bruce Lawson, Remy Sharp
4. The Definitive Guide to HTML5 By Adam Freeman
5. HTML5 Canvas: Native Interactivity and Animation for the Web By Steve Fulton, Jeff Fulton
6. Beginning HTML5 and CSS3: The Web Evolved By Christopher Murphy, Richard Clark, Oliver Studholme, Divya Manian

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## Paper – III: (Programming Lab-I)

**M. Marks: 50**

Programming Lab based on PHP and MySQL

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## Paper – IV: (Programming Lab-II)

**M. Marks: 100**

Minor Project based on XHTML 5 and JavaScript

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SEMESTER – II

## PAPER–V: COMMUNICATION SKILLS IN ENGLISH – II

**Time: 3 Hours**

**Max. Marks: 50**
**Theory Marks: 35**
**Practical Marks: 15**

**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

**Marks: 15**

**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.

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## PAPER–VI: ਪੰਜਾਬੀ  (ਲਾਜ਼ਮੀ)

ਸਮਾਂ : 3 ਘੰਟੇ                                                             ਕੁਲ ਅੰਕ :  50

### ਪਾਠ-ਕ੍ਰਮ ਅਤੇ ਪਾਠ-ਪੁਸਤਕਾਂ

### ਸੈਕਸ਼ਨ-ਏ

**ਆਤਮ ਅਨਾਤਮ** (ਕਹਾਣੀ ਭਾਗ),
(ਸੰਪ. ਸੁਹਿੰਦਰ ਬੀਰ ਅਤੇ ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ)
ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।
(ਵਿਸ਼ਾ-ਵਸਤੂ, ਪਾਤਰ ਚਿਤਰਨ)

### ਸੈਕਸ਼ਨ-ਬੀ

**ਇਤਿਹਾਸਕ ਯਾਦਾਂ** (ਇਤਿਹਾਸਕ ਲੇਖ-ਸੰਗ੍ਰਹਿ)
ਸੰਪਾ.  ਸ.ਸ.ਅਮੋਲ,
ਪੰਜਾਬੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ ।  (ਲੇਖ  7  ਤੋਂ  12)
(ਸਾਰ, ਲਿਖਣ ਸ਼ੈਲੀ)

### ਸੈਕਸ਼ਨ-ਸੀ

(ੳ) **ਸ਼ਬਦ-ਬਣਤਰ ਅਤੇ ਸ਼ਬਦ ਰਚਨਾ** : ਪਰਿਭਾਸ਼ਾ, ਮੁੱਢਲੇ ਸੰਕਲਪ

 (ਅ) **ਸ਼ਬਦ ਸੂਝਾਆ**

### ਸੈਕਸ਼ਨ-ਡੀ

 (ੳ) ਸੰਖੇਪ ਰਚਨਾ

 (ਅ) ਮੁਹਾਵਰੇ ਅਤੇ ਅਖਾਣ

## ਅੰਕ-ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1.  ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2.  ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ
    ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3.  ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ ਅੰਕ ਹਨ।
4.  ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋ ਵੱਧ ਚਾਰ
    ਉਪ-ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

# BACHELOR OF VOCATION (B.VOC.) (DATA SCIENCE AND SOFTWARE ENGG.) SEMESTER – II

## PAPER–VI: ਮੁੱਢਲੀ ਪੰਜਾਬੀ
### (In lieu of Compulsory Punjabi)

ਸਮਾਂ: 3 ਘੰਟੇ                                                                    ਕੁਲ ਅੰਕ: 50

### ਪਾਠ-ਕ੍ਰਮ

### ਸੈਕਸ਼ਨ-ਏ

**ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ** : ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ
(ਨਾਂਵ, ਪੜਨਾਂਵ, ਕਿਰਿਆ, ਵਿਸ਼ੇਸ਼ਣ, ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ, ਸਬੰਧਕ, ਯੋਜਕ ਅਤੇ ਵਿਸਮਿਕ)

### ਸੈਕਸ਼ਨ-ਬੀ

**ਪੰਜਾਬੀ ਵਾਕ ਬਣਤਰ** : ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ
(ੳ) ਸਾਧਾਰਨ ਵਾਕ, ਸੰਯੁਕਤ ਵਾਕ ਅਤੇ ਮਿਸ਼ਰਤ ਵਾਕ (ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ)
(ਅ) ਬਿਆਨੀਆ ਵਾਕ, ਪ੍ਰਸ਼ਨਵਾਚਕ ਵਾਕ ਅਤੇ ਹੁਕਮੀ ਵਾਕ (ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ)

### ਸੈਕਸ਼ਨ-ਸੀ

ਪੈਰ੍ਹਾ ਰਚਨਾ
ਸੰਖੇਪ ਰਚਨਾ

### ਸੈਕਸ਼ਨ-ਡੀ

ਚਿੱਠੀ ਪੱਤਰ (ਘਰੇਲੂ ਅਤੇ ਦਫ਼ਤਰੀ)
ਅਖਾਣ ਅਤੇ ਮੁਹਾਵਰੇ

### ਅੰਕ-ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1.  ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿੱਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।

2.  ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿੱਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ।
    ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿੱਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।

3.  ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ ਅੰਕ ਹਨ।

4.  ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ-ਪ੍ਰਸ਼ਨਾਂ
    ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

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## PAPER–VI: 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)
2. L.M. Joshi and Fauja Singh (Ed.), *History of Punjab*, Vol. I, Punjabi University, Patiala, 1977.
3. Budha Parkash, *Glimpses of Ancient Punjab*, Patiala, 1983.
4. B.N. Sharma: *Life in Northern India*, Delhi. 1966.

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SEMESTER – II

## PAPER – VII: 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

Legislation: NDPs act, Statutory warnings, Policing of Borders, Checking Supply/Smuggling of Drugs, Strict enforcement of laws, Time bound trials.

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**References:**

1.  Ahuja, Ram (2003), *Social Problems in India*, Rawat Publication, Jaipur.

2.  Extent, Pattern and Trend of Drug Use in India, Ministry of Social Justice and Empowerment, Government of India, 2004.

3.  Inciardi, J.A. 1981. *The Drug Crime Connection.* Beverly Hills: Sage Publications.

4.  Kapoor. T. (1985) *Drug Epidemic Among Indian Youth*, New Delhi: Mittal Pub.

5.  Kessel, Neil and Henry Walton. 1982, *Alcohalism. Harmond Worth:* Penguin Books.

6.  Modi, Ishwar and Modi, Shalini (1997) *Drugs: Addiction and Prevention*, Jaipur: Rawat Publication.

7.  National Household Survey of Alcohol and Drug Abuse. (2003) New Delhi, Clinical Epidemiological Unit, All India Institute of Medical Sciences, 2004.

8.  Ross Coomber and Others. 2013, *Key Concept in Drugs and Society.* New Delhi: Sage Publications.

9.  Sain, Bhim 1991, *Drug Addiction Alcoholism,* Smoking Obscenity, New Delhi: Mittal Publications.

10. Sandhu, Ranvinder Singh, 2009, *Drug Addiction in Punjab*: A Sociological Study. Amritsar: Guru Nanak Dev University.

11. Singh, Chandra Paul 2000. *Alcohol and Dependence among Industrial Workers*: Delhi: Shipra.

12. Sussman, S and Ames, S.L. (2008). *Drug Abuse: Concepts, Prevention and Cessation,* Cambridge University Press.

13. Verma, P.S. 2017, "*Punjab's Drug Problem: Contours and Characterstics",* Economic and Political Weekly, Vol. LII, No. 3, P.P. 40-43.

14. World Drug Report 2016, United Nations office of Drug and Crime.

15. World Drug Report 2017, United Nations office of Drug and Crime.

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SEMESTER – III

## PAPER-I: SOFTWARE ENGINEERING

**Time: 3 Hours** **M. Marks: 75**

**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
Concept of a Project, Project Life Cycle Phases, Tools & Techniques of Project Management, Roles & Responsibilities of a Project Manager, Feasibility Report, Types of Feasibility, Financing Arrangements, Preparation of Cost Estimates, Project Implementation Schedule, Evaluation of Project Profitability.

### SECTION-B
Working & Design of Systems, System Design & Execution Plan, Work Breakdown Structure, Project Procedure Manual, Planning, Scheduling & Monitoring, Project Direction & Co-ordination, Communications in a Project, Project Control-Progress, Performance, Schedule & Cost Control, Performance Indicators & Performance Improvement, Project Management Environment.

### SECTION-C
Introduction & Objectives of Software Specification & Requirement Analysis (SRS), Software Specification Documents & Attributes, Software Development Life Cycle, Data Dictionary, Decision Support Tools, Data Flow Diagrams, Mathematical Logic.

### SECTION – D
Report Writing: Characteristics, Types, Structure, Importance & Style of Reports, Case Studies-Designing Illustrative Reports. Project Management Software Tools: Features, Different components of both licensed and Open Source Software.

**Reference Books:**
1. Choudhary, S., 1988 : Project Management, Tata McGraw-Hill Publishing Company Limited, 1988 (Recommended as a text-book for the syllabus contents-6)
2. Sharma, R.C., and Krishna Mohan, 1996
3. Gopalakrishnan, P. & Rama Moorthy, V.E., 1993. : Business Correspondence and Report Writing, Second Edition, Tata McGraw-Hill Publishing Company Ltd., 1978, Reprinted in 1996 (Pages 129-230). : Text Book of Project Management, Mac Million India Ltd.
4. Harrison, F.L., 1992. : Advanced Project Management, A Structured Approach (Third Edition), Metropolitan .
5. Srinath, I. S., 1989. : PERT & CPM, Principles and Applications, Third Edition, Affiliated East-West Press Pvt. Ltd.
6. Rodrigues, M.V., 1992 : Effective Business Communication, Concept Publishing Company, 1992 (Pages 411-436).
7. Krishna Mohan & Banerji Meera, 1990.
8. Behforooz, Ali and Hudson Frederick, 1996. : Develop Communication Skills, MacMillian India Ltd. : Software Engineering Fundamentals, Oxford University

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SEMESTER – III

## PAPER –II: OBJECT-ORIENTED ANALYSIS AND DESIGN using UML

**Time: 3 Hours** **M. Marks: 75**

**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
**Overview of Object Oriented Systems Development:** Two Orthogonal Views of the Software, Concept of Object Oriented Software, Importance of Object Oriented Software, Object Oriented Systems Development Methodology.

**Object Basics:** An Object Oriented Philosophy, Objects, Object Behavior, Object Oriented Properties, Association and Aggregation.

**Object Oriented Systems Development Life Cycle:** The Process of Software Development, Developing Good Quality Software, Use Case Driven Approach for Object Oriented Systems Development, Reusability.

**Object Oriented Methodologies:** Introduction, Types of Object Oriented, Methodologies, Patterns, Unified Approach.

### Section-B
**Unified Modeling Languages (UML):** Overview of Unified Modeling Language (UML), Static and Dynamic Models, UML Diagrams, UML Class Diagrams, Use-Case Diagrams, UML Dynamic Modeling, Implementation diagrams, Model Management: Package and Model Organization, UML Extensibility, UML Meta-Model.

**Object Oriented Analysis** – Identifying Use-Cases: Complexity in Object Oriented Analysis, Business Process Modeling and Business Object Analysis, Use-Case Driven Object Oriented Analysis, Use-Case Model, Developing Efficient Documentation.

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## Section-C

**Object Analysis:** Classification: Object Analysis, Classification Theory, Approaches for Identifying Classes, Class Responsibility Collaboration.

**Object Oriented Analysis** – Identifying Relationships, Attributes, and Methods: Introduction, Associations, Inheritance Relationships, A Part of Relationship-Aggregation, Class Responsibility: Identifying Attributes and Methods, Class Responsibility: Defining Attributes, Object Responsibility: Methods and Messages.

**Object Oriented Design Process and Design Axioms:** Design Process, Design Axioms, Corollaries, Design Patterns.

**Designing Classes:** The Object Oriented Design Principles, UML Object Constraint Language (OCL), Strategies for Designing Classes, Class Visibility: Designing Public Private and Protected Protocols, Designing Classes: Refining Attributes, Designing Methods and Protocols, Packages and Managing Classes.

**View Layer:** User Interface Design as a Creative Process, Designing View Layer Classes, Purpose of a View Layer Interface, Prototyping the User Interface.

## Section-D

**UML:** System sequence diagrams for use case model, Domain model : identifying concepts, adding associations, adding attributes, Interaction Diagrams, Introduction to GRASP design Patterns ,Design Model: Use case realizations with GRASP patterns, Design Class diagrams in each MVC layer Mapping Design to Code, Design class diagrams for case study and skeleton code

State-Chart diagrams, Activity diagrams, Component Diagrams, Deployment diagrams, Object diagrams.
**Advanced concepts in OOAD:** Use case relationships, Generalizations Domain Model refinements, Architecture, Packaging model elements.

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SEMESTER – III

**Reference Books:**

1. Object-Oriented Analysis And Design With Applications, 3/E By Booch
2. Object Oriented Analysis and Design Using UML By D. Jeya Mala
3. Object-Oriented Analysis, Design and Implementation: An Integrated Approach By Brahma Dathan, Sarnath Ramnath
4. Object Oriented Analysis & Design By Atul Kahate
5. Applying UML and Patterns: An Introduction to Object-oriented Analysis and design By Craig Larman
6. Advanced Object-Oriented Analysis and Design Using UML By James J. Odell
7. 'Applying UML and patterns' by Craig Larman, Pearson
8. Object-Oriented Analysis & Design with the Unified Process by Satzinger, Jackson & Burd Cengage Learning
9. 'UML distilled' by Martin Fowler , Addison Wesley, 2003
10. UML 2 Toolkit, by Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado: WILE\'-Dreamtech lndia Pvt. Ltd.

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SEMESTER – III

## PAPER-III: DBMS WITH ORACLE

**Time: 3 Hours**                                                          **M. Marks: 75**

**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 to Data, Field, Record, File, Database, Database management system. Structure of
database system, Advantage and disadvantage, levels of database system, Relational model,
hierarchical model, network model, comparison of these models, E–R diagram, different keys
used in a relational system, SQL.

### Section-B
DBA, responsibilities of DBA, Relational form like INF, 2NF, 3NF, BCNF, 4th NF, 5th NF,
DBTG.

### Section-C
**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, Functions: Character Functions, Date
Functions, Group Functions, Ordering the result of a Query Aggregate Functions, Grouping the
Result of a Query.
**Understanding SQL-II:** Definition and Advantages of Views, Creating and Altering Views,
Using Views, Querying Multiple Tables using Equi-Joins, Cartesian Joins, Outer Joins, Self-
Joins, SET Operators: Union, Intersect, Minus; Introduction to Nested Queries, Define
Transaction, COMMIT and ROLLBACK

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### Section-D

**PL/SQL-I :** Introduction to PL/SQL, The Advantage of PL/SQL, PL/SQL Block Structure, PL/SQL Architecture, Fundamentals of PL/SQL, PL/SQL Data Types, Variables and Constants, Scope and Visibility of a Variable, Assignments and Expressions, Operator Precedence, Referencing Non- PL/SQL Variables, Built-in Functions, Conditional and Iterative Control, SQL Within PL/SQL, Writing PL/SQL Code, Composite Datatypes.

**PL/SQL-II:** Cursor Management in PL/SQL, Cursor Manipulation, Implicit Cursor Attributes, Exception Handling in PL/SQL; Predefined Exceptions, User Defined Exceptions. Advanced PL/SQL: Subprograms in PL/SQL, Advantages of Subprograms, Procedure, Functions, Actual versus Formal Parameters, Argument Modes, Stored Packages, Advantages of Packages, Dropping a Procedure, Dropping a Function, Dropping a Package, Using Stored Function in SQL Statements, Database Trigger, Types of Triggers, Dropping Triggers, Storage for Triggers.

**Reference Books:**
1. Introduction to Database System by C.J. Date.
2. Database Management System by B.C. Desai.
3. Database Concept by Korth.
4. Simplified Approach to DBMS– Kalyani Publishers
5. Oracle – Developer – 2000 by Ivan Bayross.
6. Database System Concepts & Oracle (SQL/PLSQL) – AP Publishers.

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## PAPER-IV: PROGRAMMING IN JAVA

**Time: 3 Hours** **M. Marks: 75**

**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
**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.

### Section-B
**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.

### Section-C
**Multi-threaded Programming**: The Java Thread model, Thread priorities, Synchronizations, Messaging. The thread class and runnable interface, The Main Thread : Creating a Thread, Implementing Runnable, Extending Thread, Creating Multiple Threads, Thread Priorities; Synchronizations : Methods, Statements, Inter Thread Communication, Deadlock, Suspending, Resuming and Stopping Threads.

### Section-D
**I/O Applets** : I/O Basics : Streams, The predefined streams; Reading console I/P, Writing console O/P. The print writer class; Reading and Writing files. Applet fundamentals, Using AWT controls: AWT Classes, Adding and Removing Controls, Responding to Controls, Controls and their classes, Graphics and Text , Layout Managers: Understanding Layout Manager, FlowLayout, BorderLayout, GridLayout, CardLayout. Menus, Event handling: Two Event Handling Mechanisms, Delegation Event Model (Events, Event Sources, Event Classes, Event Listeners, Sources of Events, Event Listener Interfaces, Handling Mouse and Keyboard Events.

**Reference Books:**
1.  Schildt Herbert : Java
2.  The Complete Reference, 4th Edition,TMH, N.Delhi.
3.  Daniel Dang, 2010: An Introduction to Java Programming, PHI, New Delhi.
4.  Balaguruswamy, E., 1998: Programming with Java, A Primer, TMH, New Delhi.
5.  Wanger & Wyke, 2000: Java Script Unleased, Techmedia, New Delhi, 2000.

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**Paper – V**
**(Programming Lab-I)**

**M. Marks: 75**

Programming Lab on SQL, PL/SQL and UML design


**Paper – VI**
**(Programming Lab-II)**

**M. Marks: 25**


Programming Lab on JAVA

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## PAPER-I: SOFTWARE TESTING

**Time: 3 Hours**                                                                                    **M. Marks: 75**

**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 to Software Testing:** Software Development Life Cycle (SDLC), Water Fall Model, Spiral Model, V- Model, Prototype Model, Hybrid Model, Agile (Scrum, XP).

### Section-B
**White Box Testing:** Loop Testing, Path Testing, Condition testing, Memory Testing, Performance Testing, Black Box Testing, Functional Testing, Integration Testing (Incremental Integration Testing): Top Down Incremental Integration Testing, Bottom Up Incremental Integration Testing & Non Incremental Integration Testing), System Testing, Acceptance Testing, Smoke Testing, Exploratory Testing, Adhoc Testing, Performance Testing (Load Testing, Stress Testing, Volume Testing, Soak Testing), Globalization Testing (I18N, L10N), Compatibility Testing, Regression Testing.

### Section-C
**Test Case Design Techniques** (Error Guessing , Equivalence Partitioning , Boundary Value Analysis, Real Practice In The Industry ), Test Case (Characteristics Of Good Test Case ,Test Case Template , How To Write A Test Case/How To Ensure The Test Coverage Is Good , How To Identify whether It Is a Good Test Case Or Not , Review Process/Peer Review , Preparing Review Report , Examples On Writing Test Cases )

### Section-D
**Software Test Life Cycle** (Writing Test Plan, Preparing Traceability Matrix, Writing Test Execution Report/Summary Report, Retrospect Meeting /Triage Meetings), Defect Life Cycle (Difference between Bug, Defect, Failure, Error. Bugzilla (Defect Tracking Tool)
**Preparing bug report using defect tracking tool**, Checking for duplicate defects,Test Link (Introduction to Test Link tool, How to manage test cases using test link tool). Analyse Complexity Of The Code. How to Install (Web Application, Client Server Application, Stand Alone Application)

**Reference Books:**
1. The Art of Software Testing By Glenford J. Myers, Corey Sandler, Tom Badgett
2. Software Testing: Principles and Practice, By Srinivasan Desikan, Gopalaswamy Ramesh
3. Foundations of Software Testing: ISTQB Certification By Dorothy Graham, Erik Van Veenendaal, Isabel
4. Software Testing: Testing Across the Entire Software Development Life Cycle By Gerald D. Everett, Raymond McLeod, Jr.
5. Practical Software Testing: A Process-Oriented Approach By Ilene Burnstein

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## PAPER-II: SOFTWARE QUALITY MANAGEMENT

**Time: 3 Hours** **M. Marks: 75**

**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 To Software Quality** Software Quality – Hierarchical models of Boehm and McCall – Quality measurement – Metrics measurement and analysis – Gilb's approach – GQM Model.

### Section-B
**Software Quality Assurance** Quality tasks – SQA plan – Teams – Characteristics – Implementation – Documentation Reviews and Audits.

**Quality Control and Reliability** Tools for Quality – Ishikawa's basic tools – CASE tools – Defect prevention and removal Reliability models – Rayleigh model – Reliability growth models for quality assessment

### Section-C
**Quality Management System:** Elements of QMS – Rayleigh model framework – Reliability Growth models for QMS – Complexity metrics and models – Customer satisfaction analysis.

### Section-D
**Quality Standards** Need for standards – ISO 9000 Series – ISO 9000-3 for software development – CMM and CMMI – Six Sigma concepts.

**Reference Books:**
1. Allan C. Gillies, "Software Quality: Theory and Management", Thomson Learning, 2003. (UI : Ch 1-4 ; UV : Ch 7-8)
2. Stephen H. Kan, "Metrics and Models in Software Quality Engineering", Pearson Education (Singapore) Pte Ltd., 2002. (UI : Ch 3-4; UIII : Ch 5-8 ; UIV :  Ch 9-11)
3. Norman E. Fenton and Shari Lawrence Pfleeger, "Software Metrics" Thomson, 2003
4. Mordechai Ben – Menachem and Garry S.Marliss, "Software Quality", Thomson Asia Pte Ltd, 2003.
5. Mary Beth Chrissis, Mike Konrad and Sandy Shrum, "CMMI", Pearson Education (Singapore) Pte Ltd, 2003.
6. ISO 9000-3 "Notes for the application of the ISO 9001 Standard to software development".

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## PAPER – III: ADVANCED JAVA PROGRAMMING

**Time: 3 Hours** **M. Marks: 75**

**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
**Swing:** Features, components, Swing vs AWT, swing containers, controls, using Dialogs, sliders, progress bars, tables, creating user interface using swing.

### Section-B
**Connectivity:** Connectivity model, Java. SQL package, JDBC Exception classes, Database connectivity, Data manipulation and navigation, Using PreparedStatement, creating database applications Java RMI: Distributed object technologies, RMI architecture, creating RMI applications.

### Section-C
**Java Servlets:** Servlets vs CGI, Servlet Lifecycle, creating and running servlets. Networking: Networking basics, Client / server model, Java and the Net, TCP/IP client sockets, TCP/IP server sockets, Inet Address, URL, Data grams, creating networking applications.
**Java Server Pages:** Introduction, JSP Architecture, JSP Elements: Implicit Objects, Comments, Directives, Action Elements, Scripting Elements., developing simple Web Applications.

### Section-D
**Java Beans :** Component architecture, Components, Advantages of Beans, Bean Developer kit (BDK), JAR files, introspection, developing Beans, Using Bound properties, The Java Beans API, Introduction to EJB (Enterprise Java Beans),Types of EJB, Uses of EJB.

**Reference Books:**
1. Keogh, James: J2EE: The Complete Reference.
2. Martin Bond, Debbie Law, Andy Longshaw, Dan Haywood, PeterRoxburgh: SAMS: Teach Yourself J2EE in 21 days, Pearson.
3. Java 6 Programming Black Book, Kogent Solution Inc., Dream Tech Press.
4. Schildt, Herbert: The Complete Reference Java 2, TMH.
5. Ivan Bayross: Web Enabled Commercial Application Development using Java 2.0, BPB.

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SEMESTER – IV

**Paper – IV**
**(Programming Lab-I)**

**M. Marks: 25**

Programming Lab on Software Testing Tools

**Paper – V**
**(Programming Lab-II)**

**M. Marks: 150**

Minor Project based on Java Programming

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## PAPER–VI (ESL-221): ENVIRONMENTAL STUDIES

**Time: 3 Hrs.** **Max. Marks: 100**

**Teaching Methodologies**
The Core Module Syllabus for Environmental Studies includes class room 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 class room 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 hand written 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.

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## SEMESTER – IV

## 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)**

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## 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)**

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## Unit-VIII

**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:**

1. Bharucha, E. 2005. Textbook of Environmental Studies, Universities Press, Hyderabad.

2. Down to Earth, Centre for Science and Environment, New Delhi.

3. Heywood, V.H. & Waston, R.T. 1995. Global Biodiversity Assessment, Cambridge House, Delhi.

4. Joseph, K. & Nagendran, R. 2004. Essentials of Environmental Studies, Pearson Education (Singapore) Pte. Ltd., Delhi.

5. Kaushik, A. & Kaushik, C.P. 2004. Perspective in Environmental Studies, New Age International (P) Ltd, New Delhi.

6. Rajagopalan, R. 2011. Environmental Studies from Crisis to Cure. Oxford University Press, New Delhi.

7. Sharma, J. P., Sharma. N.K. & Yadav, N.S. 2005. Comprehensive Environmental Studies, Laxmi Publications, New Delhi.

8. Sharma, P. D. 2009. Ecology and Environment, Rastogi Publications, Meerut.

9. State of India's Environment 2018 by Centre for Sciences and Environment, New Delhi

10. Subramanian, V. 2002. A Text Book in Environmental Sciences, Narosa Publishing House, New Delhi.