FACULTY OF ENGINEERING & TECHNOLOGY

SYLLABUS

FOR

B.SC. (INFORMATION TECHNOLOGY)
(Semester: I–VI)

Session 2019-20

GURU NANAK DEV UNIVERSITY
AMRITSAR

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(ii) Subject to change in the syllabi at any time.
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### SEMESTER – I:

<table>
<thead>
<tr>
<th>Paper No.</th>
<th>Subjects</th>
<th>M. Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper – 1</td>
<td>Fundamentals of Computers</td>
<td>75</td>
</tr>
<tr>
<td>Paper – 2</td>
<td>Introduction to Programming – C</td>
<td>75</td>
</tr>
<tr>
<td>Paper – 3</td>
<td>Applied &amp; Discrete Mathematics</td>
<td>75</td>
</tr>
<tr>
<td>Paper – 5</td>
<td>Communication Skills in English – I</td>
<td>50</td>
</tr>
<tr>
<td>Paper – 6</td>
<td>Punjabi (Compulsory) / **ਪੰਜਾਬੀ ਪੰਜਾਬੀ / **Punjab History &amp; Culture (From Earliest Times to C 320)</td>
<td>50</td>
</tr>
<tr>
<td>Paper – 7</td>
<td>* Drug Abuse: Problem, Management and Prevention (Compulsory Paper)</td>
<td>50</td>
</tr>
</tbody>
</table>

### SEMESTER – II:

<table>
<thead>
<tr>
<th>Paper No.</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Paper – 1</td>
<td>Principles of Digital Electronics</td>
<td>75</td>
</tr>
<tr>
<td>Paper – 2</td>
<td>Introduction to Programming C++</td>
<td>75</td>
</tr>
<tr>
<td>Paper – 3</td>
<td>Numerical Methods &amp; Statistical Techniques</td>
<td>75</td>
</tr>
<tr>
<td>Paper – 4</td>
<td>Practical C++ Language</td>
<td>75</td>
</tr>
<tr>
<td>Paper – 5</td>
<td>Communication Skills in English – II (Th.35+Pr.15)</td>
<td>50</td>
</tr>
<tr>
<td>Paper – 6</td>
<td>Punjabi (Compulsory) / **ਪੰਜਾਬੀ ਪੰਜਾਬੀ / **Punjab History &amp; Culture (C 320 TO 1000 B.C.)</td>
<td>50</td>
</tr>
<tr>
<td>Paper – 7</td>
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<td>50</td>
</tr>
</tbody>
</table>

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>Subjects</th>
<th>M. Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper – I</td>
<td>Introduction to Python</td>
<td>75</td>
</tr>
<tr>
<td>Paper – II</td>
<td>Data Structure</td>
<td>75</td>
</tr>
<tr>
<td>Paper – III</td>
<td>System Analysis &amp; Design</td>
<td>75</td>
</tr>
<tr>
<td>Paper – IV</td>
<td>Programming Lab – I (Python, Programming Language)</td>
<td>50</td>
</tr>
<tr>
<td>Paper – V</td>
<td>Programming Lab – II (Data Structure)</td>
<td>25</td>
</tr>
</tbody>
</table>

### SEMESTER – IV:

<table>
<thead>
<tr>
<th>Paper No.</th>
<th>Subjects</th>
<th>M. Marks</th>
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</thead>
<tbody>
<tr>
<td>Paper – I</td>
<td>Database Management System</td>
<td>75</td>
</tr>
<tr>
<td>Paper – II</td>
<td>Internet Applications</td>
<td>75</td>
</tr>
<tr>
<td>Paper – III</td>
<td>JAVA &amp; Web Designing</td>
<td>75</td>
</tr>
<tr>
<td>Paper – IV</td>
<td>Web Technologies</td>
<td>75</td>
</tr>
<tr>
<td>Paper – V</td>
<td>Programming Lab – I (Oracle)</td>
<td>50</td>
</tr>
<tr>
<td>Paper – VI</td>
<td>Programming Lab – II HTML &amp; (JAVA)</td>
<td>50</td>
</tr>
<tr>
<td>Paper – VII (ESL-221)</td>
<td>* Environmental Studies (Compulsory)</td>
<td>100</td>
</tr>
</tbody>
</table>

* Marks of Paper EVS will not be included in Grand Total.
### SEMESTER – V:

<table>
<thead>
<tr>
<th>Paper No.</th>
<th>Subjects</th>
<th>M. Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper – I</td>
<td>Computer Networks</td>
<td>100</td>
</tr>
<tr>
<td>Paper – II</td>
<td>Operating System</td>
<td>100</td>
</tr>
<tr>
<td>Paper – III</td>
<td>E-Business</td>
<td>100</td>
</tr>
<tr>
<td>Paper – IV</td>
<td>Lab – I (Computer Networks)</td>
<td>50</td>
</tr>
<tr>
<td>Paper – V</td>
<td>Lab – II (Operating System)</td>
<td>50</td>
</tr>
</tbody>
</table>

### SEMESTER – VI:

<table>
<thead>
<tr>
<th>Paper No.</th>
<th>Subjects</th>
<th>M. Marks</th>
</tr>
</thead>
</table>
| Paper – I & II:  
(Will be based on any of the three specialization options) | Option(I): Computer Graphics  
  Paper –I: Computer Graphics  
  Paper –II: Applications of Computer Graphics in C++/C | 75       |
|          | Option(II): Network Management  
  Paper –I: Network Operating System/Client Server Application  
  Paper –II: Practical Lab based on NOS | 75       |
|          | Option(III):  
| Paper – III: | Project                                       | 300      |
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. **Introduction to computer:**
Computer System Characteristics, Hardware - CPU, Memory, Input, Output & Storage devices, Organization of Secondary Storage Media, Software - System & Application, Types of processing Batch and On-line.

SECTION–b

2. **Operating System Concepts:**

SECTION–C

3. **MS Word (Word for Windows):**

SECTION–D

4. **MS – PowerPoint:**
Introduction to MS Power Point, Power Point Elements, Exploring Power Point Menu, Working with Dialog Boxes, Saving Presentation, Printing Slides, Slide View, Slide Sorter view, notes view, outline view, Formatting and enhancing text formatting.

TEXT BOOKS:
2. MS–Office 2003, Compiled by SYBIX.
B.Sc. (Information Technology) Semester – I

Paper–II: Introduction to Programming - C

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: Character set, Identifiers and Key Words, Data types, Constants, Variables, Expressions, Statements, Symbolic Constants.


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

Program Structure Storage Class: Automatic, external and static variables, multiple programs, more about library functions.

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

Arrays: Defining, processing an array, passing arrays to a function, multi–dimensional arrays.
Strings: String declaration, string functions and string manipulation

SECTION–D
Structures & Unions: Defining and processing a structure, user defined data types, structures and pointers, passing structures to functions, self referenced structure, unions.

Pointers: Fundamentals, pointer declaration, passing pointer to a function, pointer and one dimensional arrays, operation on pointers, pointers & multi–dimensional arrays of pointers, passing functions, other functions, more about pointer declarations.

References:
1. Balaguruswamy: “Programming in ANSI C”.
2. Scaum Outline Series: “Programming in C”.
3. Dennis & Ritchie: “Programming in C”.
Paper III: Applied & Discrete Mathematics

Time: 3 Hours  M. Marks: 75

Instructions for the Paper Setters:-
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SECTION–A
Sets and Relations: Definition of sets, subsets, complement of a set, universal set, intersection and union of sets, De-Morgan’s laws, Cartesian products, Equivalent sets, Countable and uncountable sets, minset, Partitions of sets, Relations: Basic definitions, graphs of relations, properties of relations

SECTION–B

SECTION–C
Boolean Algebra: Boolean algebra and its duality, Duality, Boolean Algebra as Lattices, Boolean identities, sub-algebra, Representation Theorem, Sum-of-Products Form for Sets, Sum of-Products Form for Boolean Algebra, Minimal Boolean Expressions, Prime Implicants, Boolean Functions, Karnaugh Maps.

SECTION–D
Matrices: Introduction of a Matrix, its different kinds, matrix addition and scalar multiplication, multiplication of matrices, transpose etc. Square matrices, inverse and rank of a square matrix, Matrix Inversion method.

References:
2. Kolman and Busby “Discrete Mathematical structures for Computer Sciences” PHI.
B.Sc. (Information Technology) Semester – I

Paper – IV: (Practical)
PC Computing and C Language-I

Time: 3 Hours                                                                 Max. Marks: 75

Practical – C Language Part I & PC Computing
B.Sc. (Information Technology) Semester – I

PAPER–V: COMMUNICATION SKILLS IN ENGLISH – I

Time: 3 Hours Max. Marks: 50

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
B.Sc. (Information Technology) Semester – I

PAPER–VI: पैनसी (खड़क)  
मात्रा : 3 पृष्ठ  
बिल्ड अंक : 50

मेवसल-के
आवश्यक मार्ग (वहिच काश),
(मं. मुख्यरक्षक गीत के वार्तालाप मिश्र में)
बांग्ला भाषा के भूमिगत अभ्यास।
(भूमा गांव जेलशाह, मद)  

मेवसल-शी
dिविश्वास पाण्डु (दिविश्वास सेन-मंतवाद)
मेंच. म.स.भवंश,
पूसारी सरकार पुलिस, उपाध्यक्ष। (केंद्र 1 ते 6)
(शिक्षण द्वारा, शिक्ष-सैली)

मेवसल-शी

(ए) ईआई ऋषि
(अ) ईआई भूमा के पूर्वांश के ढूंढ।

मेवसल-शी
(डी) भूमाय पूरी शिखर
: ईआई बिल्ड, ईआई मसाले के दिपित, महबुब, शिख-सैली
(ब) डाडा एंडवरीमेंट : डाडा के टेस्ट वर्ड, डाडा अल्का ईआई भूमा के भूमा, पूसारी
ईआई मसाले के अधिकार-शिखर।

ओर-बैंड के पैनसी नवीकरण तहती उपाधियां
1. पूर्व भूमा में एक डाडा गैंडो। उन गैंडा दिलें दे पूर्व पूर्व भूमा काठ।
2. दिविश्वास पूसारी के बूंद पूसा पूर्व करते रहते। उन गैंडा दिलें दे पूर्व पूर्व भूमा दे।
पूसारी पूर्व मिले दी गैंडा दिलें दी गैंडा ना मिला भूमा दे।
3. गैंडा पूर्व के बूंद पूर्व भूमा दे।
4. पैनसी मैंट व्यवहार व्यवहार व्यक्त करते जा पूर्व पूर्व की बैंड भूमा लंच डे लंच वाला 
ईआई-पूर्व के दिलें दे मिला भूमा दे।
PAPER-VI: ਪ੍ਰੋਸਕੀ ਪ੍ਰੇਸ਼ਾਣਿ (In lieu of Compulsory Punjabi)

ਚੁਣਾਵ ਵਾਲਾ : 50

ਪ੍ਰਤ੍ਥਮਾਂ

ਮੇਵਾਰਹੀ

ਪ੍ਰਤ੍ਥਮਾਂ ਦੇ

ਕੁਲ ਸਭੀ, ਕੁਲ ਮਹਤਵ, ਪ੍ਰੋਸਕੀ ਵਿਦਾਰ ਦੇ ਸੁਨਦ ਅਤੇ ਪ੍ਰੋਸਕੀ ਲਿਸਟ ਦਾ ਦਲਾਈ ਉੱਤੇ ਭਾਸ਼ਾ ਦੇ ਸਾਰਾ-ਪਦਾਰਤ (ਪ੍ਰੁਸਕੀ ਸਾਰਾ-ਪਦਾਰਤ)

ਸਦਾਸ਼ਰ ਵਿਦਿਆਰਾਸ਼ਟਰ ਦਾ ਸਰਵ ਅਨੁਸਾਰ (ਸਿਸੀ, ਦੀਪਕ, ਅੰਤਰ) : ਪ੍ਰੋਸਕੀ ਲਿਸਟ ਦੇ ਸੰਦੂੰਦ

ਮੇਵਾਰਹੀ-ਅਲਾਇਮ

ਭਾਸ਼ਾ ਸਾਰਾ-ਪਦਾਰਤ : ਪ੍ਰੁਸਕੀ ਸਾਰਾ-ਪਦਾਰਤ

(ਭਾਸ਼ਾ ਸਾਰਾ, ਸਾਰਾ ਅੰਦ੍ਰ ਵਿਦਿਆਰਾਸ਼ਟਰ, ਅੰਧ ਸਾਰਾ, ਬ੍ਰਹਿਸਪਤੀਭਾਸ਼ਾ ਅਤੇ ਇਕਿਬੁਲਵਾਦ)

ਮੇਵਾਰਹੀ-ਵਿਦਿਆਰਾਸ਼ਟਰ ਦੇ

ਕੁਲ ਸਾਰਾਦਾ ਦੀ ਭਾਸ਼ਾ ਸਾਰਾ-ਪਦਾਰਤ : ਪ੍ਰੁਸਕੀ, ਸਾਰਾ, ਬ੍ਰਹਿਸਪਤੀ ਅਨੁਸਾਰ

ਕਮਾਂਦਾਂ ਦੇ ਸਾਰਾਦਾ ਦੀ ਭਾਸ਼ਾ ਸਾਰਾ-ਪਦਾਰਤ।

ਮੇਵਾਰਹੀ-ਪ੍ਰਤਤਸ਼ਾਣ

ਛੱਡ ਦੇ ਮੇਵਾਰਹੀ ਵਿਦਿਆਰਾਸ਼ਟਰ ਦੇ ਸਾਰਾਦਾ ਦਾ ਸਾਰਾਦਾ ਦੀ ਭਾਸ਼ਾ ਸਾਰਾ-ਪਦਾਰਤ।

ਪ੍ਰੂਸਕੀ ਅਤੇ ਪ੍ਰੂਸਕੀ ਅਤੇ ਪ੍ਰੂਸਕੀ ਅਤੇ ਪ੍ਰੂਸਕੀ ਅਤੇ ਪ੍ਰੂਸਕੀ ਅਤੇ ਪ੍ਰੂਸਕੀ ਅਤੇ ਪ੍ਰੂਸਕੀ ਅਤੇ ਪ੍ਰੂਸਕੀ ਅਤੇ ਪ੍ਰੂਸਕੀ ਅਤੇ ਪ੍ਰੂਸਕੀ ਅਤੇ ਪ੍ਰੂਸਕੀ ਅਤੇ ਪ੍ਰੂਸਕੀ ਅਤੇ ਪ੍ਰੂਸਕੀ ਅਤੇ ਪ੍ਰੂਸਕੀ ਅਤੇ ਪ੍ਰੂਸਕੀ ਅਤੇ ਪ੍ਰੂਸਕੀ ਅਤੇ ਪ੍ਰੂਸਕੀ ਅਤੇ ਪ੍ਰੂਸਕੀ

1. ਪ੍ਰੂਸਕੀ ਭੋਜਨ ਦੇ ਚਲ ਬਣਾ ਦੇਖਾਉ। ਉਨ ਆਖਰੀਆਂ ਦੇ ਪ੍ਰੂਸਕੀ ਪ੍ਰਤਤਸ਼ਾਣ ਦਾ ਤੱਲ।
2. ਪ੍ਰੂਸਕੀ ਭੋਜਨ ਦੇ ਮੰਨ ਪ੍ਰੂਸਕੀ ਹੁਲਣ ਬਣਾਉ। ਉਨ ਦੇ ਹੁਲਣ ਦੇ ਹੁਲਣ ਪ੍ਰੂਸਕੀ ਸਥਾਨ ਦੀ ਤਰਕ ਦੀ ਤਰਕ ਦੀ ਤਰਕ ਦੀ ਤਰਕ ਦੀ ਤਰਕ ਦੀ ਤਰਕ ਦੀ ਤਰਕ ਦੀ ਤਰਕ ਦੀ ਤਰਕ ਦੀ ਤਰਕ।
3. ਪ੍ਰੂਸਕੀ ਹੁਲਣ ਦੇ ਪ੍ਰਤਤਸ਼ਾਣ ਅਤੇ ਤੱਖ।
4. ਪ੍ਰੂਸਕੀ ਮੰਨ ਕਢਾ ਦੇ ਸੇਵਕ ਦੇ ਚਲ ਦੀ ਪ੍ਰੂਸਕੀ ਭੋਜਨ ਦੇ ਹੁਲਣ ਦੇ ਹੁਲਣ ਹੁਲਣ ਹੁਲਣ ਹੁਲਣ ਹੁਲਣ ਹੁਲਣ ਹੁਲਣ ਹੁਲਣ ਹੁਲਣ ਹੁਲਣ ਹੁਲਣ.
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 – 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:

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.

Time: 03 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
Number System: Introduction, number conversion system, binary arithmetic, representation of signed binary numbers, 1’s and 2’s complement, Codes: straight binary code, BCD Code, Excess3 Code, Grey Code, ASCII, Integer and floating point representation

SECTION–B
Logic Gates and Boolean Algebra: Logic gates, Universal Gates, Boolean algebra and Minimization techniques, canonical forms of Boolean expressions, K-Map

SECTION–C
Combinational Circuits: Adder, Subtractor, Multiplexer, Demultiplexer, Decoder, Encoder

Sequential Circuits: Flip-flops, clocks and timers, registers, counter

SECTION–D
Semiconductor memories: Introduction, Static and dynamic devices, read only & random access memory chips, PROMS and EPROMS Address selection logic. Read and write control timing diagrams for ICs

References:
1. Integrated Electronics by Millman, Halkias McGraw Hill.
Paper–II: Introduction to Programming C++

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

Programming Paradigms: Introduction to the object oriented approach towards programming by discussing Traditional, Structured Programming methodology.

Objects & Classes: Object Definition, Instance, Encapsulation, Data Hiding, Abstraction, Inheritance, Messages, Method, Polymorphism, Classes, Candidate & Abstract Classes to be examples of the Design process.

SECTION–B

Object Oriented Programming using C++: Characteristics of OOP, Overview of C++, I/O using cout and cin, Objects and Classes, Member functions and data, private & public, constructor & destructor, Constructor Overloading, Types of Constructors.

SECTION–C

Function Overloading: Function Overloading, Default Arguments, Ambiguity in Function Overloading.

Operator Overloading: Overloading unary and binary operators, Type Conversion using Operator Overloading

SECTION–D

Inheritance: Concept of inheritance, Base & derived classes, Access Specifiers, Class Hierarchies, Types of Inheritance with examples.

Virtual Functions and Polymorphism: Virtual functions, friend functions, static function, this pointer, polymorphism, Types of Polymorphism with examples, templates, class templates.

Books:
1. Teach yourself C++, Herbert Schildth, Tata McGraw Hill.
2. Designing Object Oriented Software Rebacca Wirfs - Brock Brian Wilerson, PHI.
Paper – III: Numerical Methods and Statistical Techniques

Time: 3 Hours \hspace{1cm} \text{Max. 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:
Numerical Methods, Numerical methods versus numerical analysis, Errors and Measures of Errors.

Non–linear Equations, iterative Solutions, Multiple roots and other difficulties, Interpolation methods, Methods of bi–section, False position method, Newton Raphson – method.

Simultaneous Solution of Equations: Gauss Elimination Method, Gauss Jordan Method, numerical Integration and different Trapezoidal Rule, Simpson’s 3/8 Rule.

SECTION–B


SECTION–C

Statistical Techniques:
Measure of Central Tendency, Mean Arithmetic, Mean Geometric, Mean Harmonic, Mean, Median, Mode.
Measure of Dispersion, Mean Deviation, Standard Deviation, Co–efficient of Variation,

SECTION–D

Least square fit linear trend, Non–linear trend.
\[ Y = ax^b \]
\[ Y = ab^x \]
\[ Y = ae^x \]
Polynomial fit: \[ Y = a+bx+cn^2 \]

Books Recommended:
Practical – Implementation of Numerical Methods and Statistical Techniques Using C++ Language

Max Marks: 75
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.
B.Sc. (Information Technology) Semester – II

PAPER-VI: पेशेवरी (संस्कृत)

मात्रा : 3 पृष्ठ
बुल्लेट अंक : 50

पहले-बूढ़े पहल-प्रमुखताओं

माध्यम-प्रथा

एकाण अलंकार (चरणी छात्र),
(मध्य. पत्रित्व बीत अधि चित्रितय श्रीशं संपत)
वेद ग्रंथवेद ज्ञान पुरीतात्तमिटी, अभियुक्त
(दिग्ग-दात, भाव चिउता)

माध्यम-प्रथा

दिग्गज-महत्त्व पद्धति (दिग्गज-महत्त्व संग्रह)
भगव. न. के. भागवत,
पेशेवरी माध्यम पुर्वकाल, सुधिभाषा। (लेख 7 उ 12)
(सच, दिवस ग्रंथ)

माध्यम-प्रथा

(ख) माध्य-चक्र से माध्य उत्तर : भविष्यम, भूतके संस्कृत
(अ) मध्य मूल""""

माध्यम-प्रथा

(ग) मध्य उत्तर
(घ) भूतके अधे अभाष

अव-दौड़ अधे पुरी-संशय ढही उल्लिखितः

1. पुरुस्क पहुँच दे जान जान ढहे तरो। उत जान हिंन दे पुरुस्क पहुँच आए।
2. पुरी-संशय दे बूढ़े माध्य पुरुस्क चढ़े तरो। उत जान हिंन दे पुरुस्क संशय बुद्धि दे।
3. उतुंच पुरुस्क दे दच्छर जान उत।
4. पहेला मंट चढ़े धान मेंर मेंर चढ़े उत्त पुरुस्क ची दंड भाँड़ डंड उं डंड चढ़ दंड दंड-पुरुस्क हिंन उत मनवन दे।
PAPER–VI: पृष्ठस्तरिय धारणी
(In lieu of Compulsory Punjabi)

मात्र: 3 पंडे

पत्र-चूह

मेलमात्र-दे

महत मूलिकाएं: पहाड़ अध लघु
(तांत्रिक, प्रौद्योगिकी, विज्ञान, इंजीनियरिंग, विज्ञान इंजीनियरिंग, संसाधन, जीवन अध रिमिनियर)

मेलमात्र-ढी

पृष्ठस्तरिय रक्ष: धारणी (पृष्ठस्तरिय लघु-धारणी)
(ई) मात्र: लघु, मेलमात्र-दे अध भिंति प्यानी लघु (पहाड़ अध लघु)
(अ) विभिन्न लघु, पृष्ठस्तरिय लघु अध गुजरणी लघु (पहाड़ अध लघु)

मेलमात्र-ची

पेशा तर्क के
मुख्य तर्क

मेलमात्र-ची

विशिष्ट पंडत (पेशेवर अध लघु)
अध अध भूषण

अन्तर्देश अध भौतिकी वादी उपाधियाँ

1. पृष्ठस्तरिय में राह बजा देती। उन बजाए डिंस धो पृष्ठस्तरिय लघु।
2. विभिन्न लघु ने बूढ़े पृष्ठस्तरिय बजौने उठा। उन बजाए डिंस धो पृष्ठस्तरिय सम्भवी है।
3. उज्जवल पृष्ठस्तरिय ने गायब अध उठा।
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:**
PAPER – VII: DRUG ABUSE: PROBLEM, MANAGEMENT AND PREVENTION
(Compulsory Paper)

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: Introduction to Python

Time: 3 Hrs.  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.

The student can use only Non–programmable & Non–storage type Calculator.

Section A
Introduction to Python: Process of Computational Problem Solving, Python Programming Language
Data and Expressions: Literals, Variables and Identifiers, Operators, Expressions, Statements and Data Types

Section B
Control Structures: Boolean Expressions (Conditions), Logical Operators, Selection Control, Nested conditions, Debugging
Lists: List Structures, Lists (Sequences) in Python, Iterating Over Lists (Sequences) in Python
Functions: Fundamental Concepts, Program Routines, Flow of Execution, Parameters & Arguments

Section C
Iteration: While statement, Definite loops using For, Loop Patterns, Recursive Functions, Recursive Problem Solving, Iteration vs. Recursion
Dictionaries: Dictionaries and Files, Looping and dictionaries, Advanced text parsing
Files: Opening Files, Using Text Files, String Processing, Exception Handling

Section D
Objects and Their Use: Introduction to Object Oriented Programming
Modular Design: Modules, Top-Down Design, Python Modules
Using Databases and SQL: Database Concepts, SQLite Manager Firefox Add-on, SQL basic summary, Basic Data modeling, Programming with multiple tables

Reference Books:
1. Python for Informatics, Charles Severance, version 0.0.7
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 student can use only Non–programmable & Non–storage type Calculator.

Section A
Basic Data Structure: Introduction to elementary Data Organization, Common Operation on Data Structures, Algorithm Complexity, Big O Notation, Time – Space trade off between Algorithms.

Arrays: Array Defined, Representing Arrays in Memory, Various Operations on Linear Arrays, Multidimensional Arrays.

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.

Stacks: Description of STACK structure, Implementation of Stack using Arrays and Linked Lists, Applications of Stacks – Converting Arithmetic expression from infix notation to polish and their subsequent evaluation, Quicksort Technique to sort an array.

Section C
Queues: Description of queue structure, Implementation of queue using arrays and linked lists, Description of priorities of queues, Dequeues.

Trees: Description of Tree Structure and its Terminology, Binary Trees and Binary Search Trees and their representation in Memory

Section D
Graphs: Description of Graph Structure, Implement Graphs in Memory using Adjacency Matrix, Path Matrix.


References:
2. Tanenbaum, Data Structure using C.
Paper – III: System Analysis & Design

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. The student can use only Non–programmable & Non–storage type Calculator.

Section A

Section B

Section C
System Implementation: System testing, Quality assurance, Documentation tools, Managing system implementation.

Section D
System Testing: Introduction to testing and its types
System Maintenance: Concept of maintenance and its importance, types of maintenance

References:
Paper – IV
(Programming Lab-I)

Lab – I: Based on Python, Programming Language 50 Marks

Paper – V
(Programming Lab-II)

Lab – II: Data Structure 25 Mark
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 student can use only Non–programmable & Non–storage type Calculator.

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, concurrency control and its management,

Section C
Security, recovery of database.
SQL: Introduction to SQL–DDL, DML, DCL, Join methods & sub query, Union Intersection, Minus, Tree Walking, Built in Functions, Views, Security amongst users,

Section D
Sequences, Indexing Cursors– Implicit & Explicit, Procedures, Functions & Packages Database Triggers.

Big Data: Introduction to Big Data and Analytics, Introduction to NoSQL

Books and References:
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
7. https://www.mongodb.com/nosql-explained
8. Introduction to NoSQL (Ebook), NoSQL Seminar 2012 @ TUT, Arto Salminen
**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 student can use only Non–programmable & Non–storage type Calculator.

**Section A**
Introduction: About internet and its working, business use of internet, services effect 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.

**Section B**
E–Mail Basic Introduction, advantage and disadvantage, structure of an email message, working of e–mail (sending and receiving messages), managing email (creating new folder, deleting messages, forwarding messages, filtering messages, implementation of outlook express.

**Section C**
Internet protocol Introduction, tile transfer protocol (FTP), Gopher, Telnet, other protocols like HTTP and TCP/IP.
WWW introduction, working of WWW, Web browsing (opening, viewing, saving and printing a web page and bookmark), web designing using FFTML, DTTML with programming techniques.

**Section D**
Search engine: About search engine, component of search engine, working of search engine, difference between search engine and web directory.

Internet and extranet: Introduction, application of intranet, business value of intranet, working of intranet, role of extranet, working of extranet, difference between intranet and extranet.
B.Sc. (Information Technology) Semester – IV

Paper – III: Java & Web Designing

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.
The student can use only Non–programmable & Non–storage type Calculator.

Section A

Section B
Introduction to Java: Control Statements, Operators Data Types.

Section C
Introduction to OOPS: Classes & Methods, constructors, Inheritance & Polymorphism. Packages & Interfaces, Multithreading in Java, Exception Handling, String handling in Java & Input/Output in Java

Section D
Introduction to Web Designing through HTML

References:

Paper IV: WEB TECHNOLOGIES

Time: 3 Hrs.  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.

The student can use only Non–programmable & Non–storage type Calculator.

Section A
Web Essentials, Markup languages, CSS
Basics of Client side programming, Java script language, java script objects, host objects, Browsers and DOM

Section B
Basics of Server side programming, Java servlets
ASP/JSP, Basics of ASP/JSP objects, simple ASP and JSP pages
Representing Web data, Data base connectivity, JDBC

Section C
Introduction to PHP, basics, PHP File handling, file upload, cookies, error handling, PHP MySQL introduction
Middleware technologies, Ecommerce architecture and technologies, Ajax, Advanced web technologies and tools

Section D
Case Studies: PHP and MySQL case studies.

References:
B.Sc. (Information Technology) Semester – IV

Paper – V
(Programming Lab-I)

\textit{Lab – I:} Oracle \hspace{1cm} 50 \textit{Marks}

Paper – VI
(Programming Lab-II)

\textit{Lab – II:} HTML & Java \hspace{1cm} 50 \textit{Marks}
B.Sc. (Information Technology) Semester – IV

PAPER-VII (ESL-221): ENVIRONMENTAL STUDIES

Time: 3 Hrs. Max. Marks: 100

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)
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:
2. Down to Earth, Centre for Science and Environment, New Delhi.
9. State of India’s Environment 2018 by Centre for Sciences and Environment, New Delhi
Paper – I: Computer Networks

Time: 3 Hrs. M. Marks: 100

Instructions for the Paper Setters:-
Note: 1. In theory eight questions are to be set in all. The candidates are required to attempt five of them. All questions are to be of equal marks. The maximum marks of the paper is 100.
2. The student can use only Non-programmable & Non-storage type Calculator.

UNIT – I
Basic concepts of Computer Networks, Client Server Network topologies.

OSI Reference Model, TCP/IP Model Comparison and Critiques, Concepts of Routers, bridges, Repeaters, Gateways.

UNIT – II

Transmission Media: – Twisted Pair, Co–axial Cable, Baseband, Broadband, Fibre optics, Satellite, Wireless Transmission, Telephone System

The Data link Layer: Design Issues, Error Detection and Correction, Data Link Sliding Window Protocols.

UNIT – III
IEEE Standard 802 for LAN’s and MAN’s Routing Algorithm.

Internetworking, Network Security.

References:
1. Tanenbaum A.S. ‘Computer Network’, PHI.
2. Stalings W., ‘Data and Computer Communications’, PHI.
B.Sc. (Information Technology) Semester – V

Paper – II: Operating System

Time: 3 Hrs. Max. Marks: 100

Instructions for the Paper Setters:-

Note: 1. In theory eight questions are to be set in all. The candidates are required to attempt five of them. All questions are to be of equal marks. The maximum marks of the paper is 100.

2. The student can use only Non–programmable & Non–storage type Calculator.

UNIT – I

Introduction:
Definition, evolution, need, early system, function, buffering spooling, single user, multiuser, multiprogramming, multiprocessing, multitasking, multithreading, batch processing, real time, time systems, time sharing systems, security, protection.

Processor Management / CPU Scheduling:
CPU – I/O Basic Cycle, process state, process control block, Scheduling, Queue, Schedulers, Scheduling Algorithms, Performance criteria, FCFS, SJF, Priority, SRTF, Round Robin, Multi – Levels users Algorithm.

UNIT – II

Memory Management:
Concept of Relocation, Swapping, backing storage, swap time, MFT, MFT job scheduling, region size selection, memory fragmentation, MVT, MVT job scheduling compaction, paging, segmentation.

Virtual Memory:

UNIT – III

Device Management:
I/O and device management physical characteristics, FCFS, SSTF, SCAN, CSCAN.

File Management:
Disk and File Management.

Deadlocks:
Definition, Necessary condition for deadlock, Deadlock Prevention Mutual exclusion, Hold and wait, No pre–emption, circular wait Banker’s algorithms, Recovery from deadlock, semaphores.

References:
Instructions for the Paper Setters:-
Note: 1. In theory eight questions are to be set in all. The candidates are required to attempt five of them. All questions are to be of equal marks. The maximum marks of the paper is 100.
2. The student can use only Non-programmable & Non-storage type Calculator.

UNIT – I

E – Commerce:
Its definition, aims, process tools and results, EDI, VAN’s and internet as Promoters, Types of E – Commerce, Commerce – net.

Steps to Star E – Commerce:
H/W & S/W Requirements, steps involved in opening your own online business.

EDI:
EDI Vs Traditional Systems, EDI enabled procurement process, components of EDI system, EDI implementation issues.

UNIT – II

Concerns for E – Commerce:
Basic challenges to E – Commerce, Technological, legal and regulators heads, Internet Bandwidth & Technological Issues.


Re – Engineering for Change:
Business process re – engineering BPR, Methodology Planning Methods for change to EC / EDI.

UNIT – III

Case Studies: To demonstrate usefulness of E – Commerce in various business areas.
Banks, Reservations, E – Governance, supply – chain, Management, manufacturing, retailing and online – publishing.

E – Commerce in India:
EDI service providers in India, EDI Projects in the Government regulatory agencies. The Internet in India, laws for E – Commerce in India.

Reference:
E – Commerce – The Cutting Edge of Business.
Kamlesh K. Bajaj.
Debjani Nag.
Time: 3 Hours

Practical Lab: Computer Networks
Time: 3 Hours  M.M.: 50

Practical Lab: Operating Systems
Instructions for the Paper Setters:

Note: 1. In theory eight questions are to be set in all. The candidates are required to attempt five of them. All questions are to be of equal marks.

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

UNIT-I
Preliminaries
Basics of Computer Graphics, Computer graphics Hardware and Software.
2D Primitives
Line drawing, circle drawing and simple line clipping algorithms.

UNIT-II
2D-Transformations
Simple 2D-Transformations and their different representations, composite 2D-Transformations.
3D-Transformations
Simple 3D-Transformations, composite 3D-Transformations.

UNIT-III
Hidden Surfaces
Depth comparisons, Z-buffer algorithm, Scan line algorithms.
Projections
Parallel Projections, Perspective Projections, Oblique Projections.

References:

Option I: (Paper – II)

Time: 3 Hours

M.M.: 25

Practical Lab: Applications of Computer Graphics in C++/C
B.Sc. (Information Technology) Semester – VI


Network Operating System/Client–Server Application

Time: 3 Hours                              Max. Marks: 75

Instructions for the Paper Setters:-

Note : 1. In theory eight questions are to be set in all. The candidates are required to attempt five of them. All questions are to be of equal marks.
2. The student can use only Non–programmable & Non–storage type Calculator.

UNIT – I


UNIT – II


UNIT – III


References:

1. MCSA/MCSE; Exam 70–291, Implementing, Managing and Maintaining a Windows Server 2003
Lab: Networking O.S./Client–Server Lab.

Designing of homogenous and heterogenous lab.

Creating Windows 95/NT/Novell Netware Server.

Creating of Proxy Server.

Creating of Database Server.
Time: 3 Hrs. M. Marks: 100

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.

UNIT–I

Virtualization: Definition, Type of Virtualization, Benefits, Limitations, Virtualization and Cloud, Virtual Appliance.

UNIT–II


UNIT–III


Textbooks:

Reference Books:
General Instructions:

1. A software module based on the work done in the entire course is to be developed.
2. The soft copy of the module shall be submitted to the College/Institute till April 30.
3. The software module shall be developed in groups, consisting of at most two students in a group.
4. The respective college shall depute guide(s)/supervisor(s) under whose supervision the software module shall be developed. The guide/supervisor shall clarify that the work done is original & authenticated. The certificate found to be incorrect at any stage shall attract the proceedings against all the stakeholders, as per the University rules.
5. The evaluation of the module shall be done as per the common ordinance of UG/PG w.e.f. 2012-2013 under semester system.