Syllabus Unitization& Prescribed Books (Session 2023-2024)

Department of CS & IT

Class – BSc IT II Semester

Pattern of Question Paper -Eight questions of equal marks (Specified in the syllabus), 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.

INTRODUCTION TO PROGRAMMING - C++

M. Marks: 75

Credits
L T P
3 1 0

Month wise Division	Syllabus Unitization
Jan-Feb	**SECTION–A** **Programming Paradigms**: Introduction to the object oriented approach towards programmingby discussing Traditional, Structured Programming methodology. **Objects & Classes:** Object Definition, Instance, Encapsulation, Data Hiding, Abstraction, Inheritance, Messages, Method, Polymorphism, Classes, Candidate & Abstract Classes to beexamples 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.
March	**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.
April	**SECTION–D** **Virtual Functions and Polymorphism:** Virtual functions, friend functions, static function, this pointer, polymorphism, Types of Polymorphism with examples, templates, class templates.

Prescribed Book

Book Name – Object Oriented Programming in C++

Author – E Balaguruswamy

Publisher – McGraw Hill Education

Numerical Methods & Statistical Techniques

M. Marks: 75

Credits
L T P
3 1 0

Month wise Division	Syllabus Unitization
Jan-Feb	**SECTION–A** **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. **SECTION–B** **Numerical Integration**: Trapezoidal Rule, Simpson's 3/8 Rule. **Interpolation and Curve Fitting**: Lagrangian Polynomials, Newton's Methods: Forward Difference Method, Backward Difference Method Divided Difference Method
March	**SECTION–D** **Least square fit:** linear trend, Non–linear trend. $Y = ax^b$ $Y = ab^x$ $Y = ae^x$ Polynomial fit: $Y = a+bx+cn^2$
April	**SECTION–C** **Statistical Techniques:** Measure of Central Tendency, Arithmetic mean, Geometric mean, Harmonic mean, Mean, Median, Mode. **Measures of dispersion**: Mean deviation, Standard deviation, Co–efficient of variation. **Correlation**

Principles of Digital Electronics

M. Marks: 75

Credits
L T P
3 1 0

Month wise Division	Syllabus Unitization
Jan-Feb	**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
March	**SECTION–C** Combinational Circuits: Adder, Subtracter, Multiplexer, Demultiplexer, Decoder, Encoder Sequential Circuits: Flip-flops, clocks and timers, registers, counter
April	**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

Prescribed Book

Book Name – Digital Electronics

Author – Sajjan Singh

Publisher – Kalyani Publications

Communication Skills in English-II

Month wise Division	Unitization of Syllabus
Jan-Feb	Introduction to Communication Skills in English; Listening Skills : Meaning, Difference between Hearing and Listening; Types of Listening; Barriers to Listening and Steps to Improve Listening Skills; Characteristics of a Good Listener; Practice of Listening Activities through Audios and Worksheets; Feedback Skills.
March	Attending and Making Telephone Calls; Note Taking and Note Making ; Phonetics : Introduction to Study of Sounds in English : Consonant Sounds, Monophthongs & Diphthongs. Practice of Phonetic Transcription; Speaking and Conversational Skills: Components of a meaningful and easy conversation; Situational based Conversation in English
April	Understanding the Cue or Body Language and making appropriate responses; Forms of Polite Speech; Asking Information on General Topics; Oral description of a common objects, situation or concept; Stress and Intonation in Speaking Skills.

Book Prescribed:

KLS Pioneer Communication Skills by Singh & Bhatia

General Punjabi

M. Marks: 100

ਪੈਟਰਨ: ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿੱਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ 5 ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ ਅੰਕ ਹਨ।

MONTH	UNITISATION OF SYLLABUS (TOPICS)
Jan-Feb	ਸਰਵੋਤਮ ਪੰਜਾਬੀ ਸਾਹਿਤ- ਨਿਬੰਧ: ਘਰ ਦਾ ਪਿਆਰ, ਮਾਂ ,ਕਿਰਤ। ਰੇਖਾ-ਚਿੱਤਰ: ਬਲਰਾਜ ਸਾਹਨੀ ,ਡਾਕਟਰ ਗੰਡਾ ਸਿੰਘ, ਫੁੱਲਾਂ ਨਾਲ ਲੱਦਿਆ ਗੁਲਮੋਹਰ -ਦੇਵਿੰਦਰ ਸਤਿਆਰਥੀ। ਇਤਿਹਾਸਿਕ ਯਾਦਾਂ- ਕੋਬੇ- ਜਾਪਾਨ ਦੇ ਪਹਿਲੇ ਪ੍ਰਭਾਵ, ਨਾਭਾ ਮੋਰਚਾ, ਵਿਆਕਰਨ: ਸ਼ਬਦ ਬਣਤਰ ਅਤੇ ਸ਼ਬਦ ਰਚਨਾ। ਚਿੱਠੀ ਪੱਤਰ ,ਅਖਾਣ, ਮੁਹਾਵਰੇ ਅਭਿਆਸ।
March	ਸਰਵੋਤਮ ਪੰਜਾਬੀ ਸਾਹਿਤ: ਨਿਬੰਧ-ਭੇਡ ਚਾਲ, ਖੁਸ਼ਾਮਦੀ ਨਾਲ, ਸ਼ਾਂਤੀ ਨਿਕੇਤਨ। ਰੇਖਾ-ਚਿੱਤਰ-ਸਾਧਾਰਨ ਵਿਅਕਤੀ ਅਸਾਧਾਰਨ ਪ੍ਰਾਪਤੀ- ਨਾਨਕ ਸਿੰਘ, ਰਿਣ ਪਿਤਰਾਂ ਦਾ- ਮੋਹਨ ਸਿੰਘ ਦੀਵਾਨਾ, ਆਪਣੇ ਆਪ ਤੋ ਗੈਰ-ਹਾਜ਼ਰ: ਦਲੀਪ ਕੌਰ ਟਿਵਾਣਾ। ਇਤਿਹਾਸਿਕ ਯਾਦਾਂ: ਮੁੜ ਪ੍ਰੋਫੈਸਰੀ, 11 ਨਵੰਬਰ 1918। ਵਿਆਕਰਣ: ਚਿੱਠੀ -ਪੱਤਰ ਅਖਾਣ-ਮੁਹਾਵਰੇ ਅਭਿਆਸ।
April	ਸਰਵੋਤਮ ਪੰਜਾਬੀ ਸਾਹਿਤ- ਨਿਬੰਧ: ਜ਼ਿੰਦਗੀ ਦਾ ਖੇੜਾ ਮੋੜ ਲਿਆਈਏ, ਢਹਿੰਦੀ ਕਲਾ ਚੜ੍ਹਦੀ ਕਲਾ। ਰੇਖਾ-ਚਿੱਤਰ: ਦਾਰਾ ਸਿੰਘ ,ਭਾਈ ਮਰਦਾਨਾ ਇਤਿਹਾਸਿਕ ਯਾਦਾਂ: ਅਫਗਾਨਿਸਤਾਨ ਦੇ ਲੋਕ ,ਸ਼ਾਂਤੀ ਨਿਕੇਤਨ। ਵਿਆਕਰਣ: ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ। ਚਿੱਠੀ -ਪੱਤਰ ਅਖਾਣ-ਮੁਹਾਵਰੇ ਅਭਿਆਸ।