



Multibhashi



Identifying Kannada Alphabets

Let's learn Kannada alphabets!



Multibhashi

Class Objective

Let us learn to identify Kannada
Alphabets!



Concept A: Introduction to Kannada Alphabets

Kannada Alphabets

In Kannada, there are a total of 52 alphabets. Out of that 16 are vowels and 36 are Consonants. They are called

- Swaragalu
- Vyanjanagalu



Concept A: Introduction to Kannada Alphabets





Concept A: Introduction to Kannada Alphabets

Words starting with Kannada Vowels (Kannada Swaragalu):

Alphabet	Words starting with it
ಅ	ಅಟ , ಅನೆ , ಅಮೆ
ಇ	ಇಲಿ , ಇದು , ಇನ್ನೂ
ಉ	ಉಂಗುರ , ಉಗುರು
ಐ	ಐಸ್ ಕ್ರೀಮ್ , ಐರಾವತ್ , ಐದು
ಎ	ಎಲೆ , ಎಂಟು , ಎರಡು



Kannada Consonants (Kannada Vyanjanagalu):

Consonants

ಕ	ಖ	ಗ	ಘ	ಙ	ಚ	ಛ	ಜ	ಝ	ಞ
ka	kha	ga	gha	ṅa	ca	cha	ja	jha	ña
[ka]	[k ^h a]	[ga]	[g ^h a]	[ŋa]	[tʃa]	[tʃ ^h a]	[dʒa]	[dʒ ^h a]	[ɲa]
ಟ	ಠ	ಡ	ಢ	ಣ	ತ	ಥ	ದ	ಧ	ನ
ṭa	ṭha	ḍa	ḍha	ṇa	ta	tha	da	dha	na
[ṭa]	[t ^h a]	[ḍa]	[ḍ ^h a]	[ɳa]	[ta]	[t ^h a]	[da]	[d ^h a]	[na]
ಪ	ಫ	ಬ	ಭ	ಮ	ಯ	ರ	ಲ	ವ	
pa	pha	ba	bha	ma	ya	ra	la	va	
[pa]	[p ^h a]	[ba]	[b ^h a]	[ma]	[ja]	[ra]	[la]	[va]	
ಶ	ಷ	ಸ	ಹ	ಳ	ಕ್ಷ	ಜ್ಞ			
śa	ṣa	sa	ha	ḷa	kṣa	jña			
[ɕa]	[ʃa]	[sa]	[ha]	[ɭa]	[kʂa]	[dʒna]			

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
PHYSICAL CHEMISTRY
PHYSICAL CHEMISTRY
PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
PHYSICAL CHEMISTRY
PHYSICAL CHEMISTRY
PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
PHYSICAL CHEMISTRY
PHYSICAL CHEMISTRY
PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
PHYSICAL CHEMISTRY
PHYSICAL CHEMISTRY
PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
PHYSICAL CHEMISTRY
PHYSICAL CHEMISTRY
PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
PHYSICAL CHEMISTRY
PHYSICAL CHEMISTRY
PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
PHYSICAL CHEMISTRY
PHYSICAL CHEMISTRY
PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
PHYSICAL CHEMISTRY
PHYSICAL CHEMISTRY
PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
PHYSICAL CHEMISTRY
PHYSICAL CHEMISTRY
PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

THE UNIVERSITY OF CHICAGO
INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRICAL ENGINEERING
EECS 441: DIGITAL SIGNAL PROCESSING
LECTURE 10: DISCRETE-TIME FOURIER TRANSFORM

1.1. DISCRETE-TIME FOURIER TRANSFORM

1.2. DISCRETE-TIME FOURIER TRANSFORM

1.3. DISCRETE-TIME FOURIER TRANSFORM

1.4. DISCRETE-TIME FOURIER TRANSFORM

1.5. DISCRETE-TIME FOURIER TRANSFORM

1.6. DISCRETE-TIME FOURIER TRANSFORM

THE UNIVERSITY OF CHICAGO
INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRICAL ENGINEERING
EECS 441: DIGITAL SIGNAL PROCESSING
LECTURE 10: DISCRETE-TIME FOURIER TRANSFORM

1.1. DISCRETE-TIME FOURIER TRANSFORM

1.2. DISCRETE-TIME FOURIER TRANSFORM

1.3. DISCRETE-TIME FOURIER TRANSFORM

1.4. DISCRETE-TIME FOURIER TRANSFORM

1.5. DISCRETE-TIME FOURIER TRANSFORM

1.6. DISCRETE-TIME FOURIER TRANSFORM

THE UNIVERSITY OF CHICAGO
INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRICAL ENGINEERING
EECS 441: DIGITAL SIGNAL PROCESSING
LECTURE 10: DISCRETE-TIME FOURIER TRANSFORM

1.1. DISCRETE-TIME FOURIER TRANSFORM

1.2. DISCRETE-TIME FOURIER TRANSFORM

1.3. DISCRETE-TIME FOURIER TRANSFORM

1.4. DISCRETE-TIME FOURIER TRANSFORM

1.5. DISCRETE-TIME FOURIER TRANSFORM

1.6. DISCRETE-TIME FOURIER TRANSFORM

THE UNIVERSITY OF CHICAGO
INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRICAL ENGINEERING
EECS 441: DIGITAL SIGNAL PROCESSING
LECTURE 10: DISCRETE-TIME FOURIER TRANSFORM

1.1. DISCRETE-TIME FOURIER TRANSFORM

1.2. DISCRETE-TIME FOURIER TRANSFORM

1.3. DISCRETE-TIME FOURIER TRANSFORM

1.4. DISCRETE-TIME FOURIER TRANSFORM

1.5. DISCRETE-TIME FOURIER TRANSFORM

1.6. DISCRETE-TIME FOURIER TRANSFORM

THE UNIVERSITY OF CHICAGO
INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRICAL ENGINEERING
EECS 441: DIGITAL SIGNAL PROCESSING
LECTURE 10: DISCRETE-TIME FOURIER TRANSFORM

1.1. DISCRETE-TIME FOURIER TRANSFORM

1.2. DISCRETE-TIME FOURIER TRANSFORM

1.3. DISCRETE-TIME FOURIER TRANSFORM

1.4. DISCRETE-TIME FOURIER TRANSFORM

1.5. DISCRETE-TIME FOURIER TRANSFORM

1.6. DISCRETE-TIME FOURIER TRANSFORM

THE UNIVERSITY OF CHICAGO
INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRICAL ENGINEERING
EECS 441: DIGITAL SIGNAL PROCESSING
LECTURE 10: DISCRETE-TIME FOURIER TRANSFORM

1.1. DISCRETE-TIME FOURIER TRANSFORM

1.2. DISCRETE-TIME FOURIER TRANSFORM

1.3. DISCRETE-TIME FOURIER TRANSFORM

1.4. DISCRETE-TIME FOURIER TRANSFORM

1.5. DISCRETE-TIME FOURIER TRANSFORM

1.6. DISCRETE-TIME FOURIER TRANSFORM

THE UNIVERSITY OF CHICAGO
INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRICAL ENGINEERING
EECS 441: DIGITAL SIGNAL PROCESSING
LECTURE 10: DISCRETE-TIME FOURIER TRANSFORM

1.1. DISCRETE-TIME FOURIER TRANSFORM

1.2. DISCRETE-TIME FOURIER TRANSFORM

1.3. DISCRETE-TIME FOURIER TRANSFORM

1.4. DISCRETE-TIME FOURIER TRANSFORM

1.5. DISCRETE-TIME FOURIER TRANSFORM

1.6. DISCRETE-TIME FOURIER TRANSFORM

THE UNIVERSITY OF CHICAGO
INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRICAL ENGINEERING
EECS 441: DIGITAL SIGNAL PROCESSING
LECTURE 10: DISCRETE-TIME FOURIER TRANSFORM

1.1. DISCRETE-TIME FOURIER TRANSFORM

1.2. DISCRETE-TIME FOURIER TRANSFORM

1.3. DISCRETE-TIME FOURIER TRANSFORM

1.4. DISCRETE-TIME FOURIER TRANSFORM

1.5. DISCRETE-TIME FOURIER TRANSFORM

1.6. DISCRETE-TIME FOURIER TRANSFORM

THE UNIVERSITY OF CHICAGO
INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRICAL ENGINEERING
EE-561: ADVANCED TOPICS IN SIGNAL PROCESSING
LECTURE 1: INTRODUCTION TO THE COURSE

1.1 COURSE OBJECTIVES

1.2 COURSE STRUCTURE

1.3 COURSE MATERIALS

1.4 COURSE SCHEDULE

1.5 COURSE FACULTY

1.6 COURSE CONTACTS

THE UNIVERSITY OF CHICAGO
INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRICAL ENGINEERING
EECS 441: ADVANCED TOPICS IN SIGNAL PROCESSING
LECTURE 1: INTRODUCTION TO THE COURSE

1.1 COURSE OBJECTIVES

1.2 COURSE STRUCTURE

1.3 COURSE MATERIALS

1.4 COURSE SCHEDULE

1.5 COURSE FACULTY

1.6 COURSE CONTACTS

THE UNIVERSITY OF CHICAGO
INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRICAL ENGINEERING
EECS 441: ADVANCED TOPICS IN SIGNAL PROCESSING
LECTURE 1: INTRODUCTION TO THE COURSE

1.1 COURSE OBJECTIVES

1.2 COURSE STRUCTURE

1.3 COURSE MATERIALS

1.4 COURSE SCHEDULE

1.5 COURSE FACULTY

1.6 COURSE CONTACTS

THE UNIVERSITY OF CHICAGO
INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRICAL ENGINEERING
EECS 441: ADVANCED TOPICS IN SIGNAL PROCESSING
LECTURE 1: INTRODUCTION TO THE COURSE

1.1 COURSE OBJECTIVES

1.2 COURSE STRUCTURE

1.3 COURSE MATERIALS

1.4 COURSE SCHEDULE

1.5 COURSE FACULTY

1.6 COURSE CONTACTS

THE UNIVERSITY OF CHICAGO
INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRICAL ENGINEERING
EECS 441: ADVANCED TOPICS IN SIGNAL PROCESSING
LECTURE 1: INTRODUCTION TO THE COURSE

1.1 COURSE OBJECTIVES

1.2 COURSE STRUCTURE

1.3 COURSE MATERIALS

1.4 COURSE SCHEDULE

1.5 COURSE FACULTY

1.6 COURSE CONTACTS

THE UNIVERSITY OF CHICAGO
INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRICAL ENGINEERING
EECS 441: ADVANCED TOPICS IN SIGNAL PROCESSING
LECTURE 1: INTRODUCTION TO THE COURSE

1.1 COURSE OBJECTIVES

1.2 COURSE STRUCTURE

1.3 COURSE MATERIALS

1.4 COURSE SCHEDULE

1.5 COURSE FACULTY

1.6 COURSE CONTACTS

THE UNIVERSITY OF CHICAGO
INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRICAL ENGINEERING
EECS 441: ADVANCED TOPICS IN SIGNAL PROCESSING
LECTURE 1: INTRODUCTION TO THE COURSE

1.1 COURSE OBJECTIVES

1.2 COURSE STRUCTURE

1.3 COURSE MATERIALS

1.4 COURSE SCHEDULE

1.5 COURSE FACULTY

1.6 COURSE CONTACTS

THE UNIVERSITY OF CHICAGO
INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRICAL ENGINEERING
EECS 441: ADVANCED TOPICS IN SIGNAL PROCESSING
LECTURE 1: INTRODUCTION TO THE COURSE

1.1 COURSE OBJECTIVES

1.2 COURSE STRUCTURE

1.3 COURSE MATERIALS

1.4 COURSE SCHEDULE

1.5 COURSE FACULTY

1.6 COURSE CONTACTS

THE UNIVERSITY OF CHICAGO
INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRICAL ENGINEERING
EECS 441: ADVANCED TOPICS IN SIGNAL PROCESSING
LECTURE 1: INTRODUCTION TO THE COURSE

1.1 COURSE OBJECTIVES

1.2 COURSE STRUCTURE

1.3 COURSE MATERIALS

1.4 COURSE SCHEDULE

1.5 COURSE FACULTY

1.6 COURSE CONTACTS

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
PHYSICAL CHEMISTRY
PHYSICAL CHEMISTRY
PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

PHYSICAL CHEMISTRY

THE UNIVERSITY OF CHICAGO
INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRICAL ENGINEERING
EECS 441: DIGITAL SIGNAL PROCESSING
LECTURE 10: DISCRETE-TIME FOURIER TRANSFORM

1.1. DISCRETE-TIME FOURIER TRANSFORM

1.2. DISCRETE-TIME FOURIER TRANSFORM

1.3. DISCRETE-TIME FOURIER TRANSFORM

1.4. DISCRETE-TIME FOURIER TRANSFORM

1.5. DISCRETE-TIME FOURIER TRANSFORM

1.6. DISCRETE-TIME FOURIER TRANSFORM

THE UNIVERSITY OF CHICAGO
INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ELECTRICAL ENGINEERING
EECS 441: DIGITAL SIGNAL PROCESSING
LECTURE 10: DISCRETE-TIME FOURIER TRANSFORM

1.1. DISCRETE-TIME FOURIER TRANSFORM

1.2. DISCRETE-TIME FOURIER TRANSFORM

1.3. DISCRETE-TIME FOURIER TRANSFORM

1.4. DISCRETE-TIME FOURIER TRANSFORM

1.5. DISCRETE-TIME FOURIER TRANSFORM

1.6. DISCRETE-TIME FOURIER TRANSFORM