

MAA OMWATI DEGREE COLLEGE (HASSANPUR)



INDIAN KNOWLEDGE SYSTEM

Program : BCA 3RD SEM

IMPORTANT NOTES FOR EXAM

**MODULE 1: INTRODUCTION TO INDIAN
KNOWLEDGE SYSTEM (IKS)**

1. Indian Knowledge System (IKS)

Meaning

Indian Knowledge System (IKS) refers to the vast body of knowledge, wisdom, practices, philosophies, sciences, arts, technologies, and cultural traditions developed in the Indian subcontinent over thousands of years.

IKS is not limited to religious or philosophical knowledge. It includes **mathematics, astronomy, medicine, metallurgy, architecture, agriculture, linguistics, literature, governance, economics, music, yoga, philosophy, and environmental practices.**

Major Sources of IKS

Important sources include:

- **Vedas** – Rigveda, Samaveda, Yajurveda and Atharvaveda
- **Upanishads** – philosophical and spiritual knowledge
- **Vedangas** – six auxiliary disciplines of the Vedas
- **Puranas** – cultural, historical and religious traditions
- **Ramayana and Mahabharata**
- **Arthashastra** – governance, economics and administration
- **Ayurveda texts** – Charaka Samhita and Sushruta Samhita
- **Mathematical and astronomical works** – Aryabhata, Brahmasphutasiddhanta, etc.
- **Agamas and Shilpa Shastras** – architecture, sculpture and temple construction

Characteristics of IKS

1. **Holistic approach** – body, mind, society and nature are considered interconnected.
2. **Experiential knowledge** – learning through observation, practice and experience.
3. **Interdisciplinary nature** – different branches of knowledge are interconnected.
4. **Ethical orientation** – knowledge is associated with values and responsibility.
5. **Sustainability** – traditional practices often emphasize harmony with nature.
6. **Guru-Shishya tradition** – knowledge was traditionally transmitted from teacher to student.
7. **Practical orientation** – knowledge was applied to daily life.

Importance

IKS helps us understand India's intellectual heritage and provides perspectives that can contribute to modern education, science, technology, healthcare, sustainability and cultural studies.

2. Indian Culture and Civilization

Meaning of Culture

Culture refers to the values, beliefs, traditions, customs, language, art, literature, social practices and way of life of a society.

Meaning of Civilization

Civilization generally refers to the organized development of society, including cities, institutions, technology, economic systems, governance and material achievements.

India has one of the world's ancient continuous cultural traditions.

Major Features of Indian Culture

1. Unity in Diversity

India contains numerous:

- Languages
- Religions
- Communities
- Festivals
- Food traditions
- Clothing styles
- Art forms

Yet there is a strong sense of cultural unity.

2. Spiritual Orientation

Indian civilization traditionally gives importance to questions concerning:

- Self
- Consciousness
- Reality
- Ethics
- Liberation
- Relationship between humans and nature

3. Family and Social Values

Traditional Indian society emphasizes:

- Respect for elders
- Family relationships
- Social responsibility
- Cooperation
- Hospitality

4. Respect for Nature

Nature has traditionally been viewed as an interconnected part of life. Rivers, mountains, forests, animals and plants have important cultural significance.

5. Knowledge Traditions

India developed important traditions in:

- Mathematics
- Medicine
- Astronomy
- Linguistics
- Philosophy
- Architecture
- Metallurgy

Indian Civilization

Important archaeological traditions include:

- Indus/Harappan Civilization
- Vedic cultural traditions
- Mahajanapadas
- Mauryan period
- Gupta period
- Medieval cultural developments
- Later regional civilizations

Importance

The study of Indian culture and civilization helps students understand the historical development of Indian society and its contribution to global knowledge.

3. Ancient Indian Chemistry

Ancient Indian chemistry developed mainly through **metallurgy, medicine, mineral processing, dyeing, fermentation, ceramics, cosmetics and alchemical practices.**

The traditional field associated with chemical and alchemical practices is often referred to as **Rasashastra.**

Major Areas

1. Metallurgical Processing

Ancient Indians developed techniques for:

- Extraction of metals
- Smelting
- Alloy formation
- Metal purification
- Casting

2. Medicinal Preparations

Ayurvedic traditions used:

- Herbs
- Minerals
- Metals
- Salts
- Oils
- Plant extracts

to prepare various formulations.

3. Dyes and Pigments

Natural materials were used for producing:

- Red
 - Yellow
 - Blue
 - Black
 - Green
- and other colours.

4. Fermentation

Traditional knowledge included processes involving fermentation for:

- Medicinal preparations
- Food
- Beverages

5. Glass and Ceramics

Archaeological evidence indicates knowledge of:

- Pottery
- Glazing
- Glass-related materials
- High-temperature processing

Importance

Ancient Indian chemical knowledge demonstrates the practical application of observation, experimentation and material processing.

4. Ancient Indian Metallurgy

Metallurgy is the science and technology of extracting, processing and using metals.

India has a long history of metallurgical development.

Metals Known and Used

Ancient Indian metallurgical traditions worked with metals such as:

- Gold
- Silver
- Copper
- Iron
- Lead
- Tin
- Zinc

Important Achievements

Iron Technology

Ancient India developed sophisticated iron-working techniques. The **Iron Pillar of Delhi** is frequently cited as an important example of historical Indian iron technology because of its remarkable resistance to corrosion.

Wootz Steel

Indian regions were historically associated with the production of high-quality crucible steel, commonly known as **wootz steel**. It became famous through trade and influenced later steel traditions.

Zinc

Ancient India developed methods for producing metallic zinc through distillation techniques. **Zawar in Rajasthan** is an important archaeological site associated with historical zinc production.

Metallurgical Processes

Traditional metallurgists used:

1. Ore selection
2. Crushing
3. Heating
4. Smelting
5. Reduction
6. Refining
7. Alloying
8. Casting
9. Forging

Importance

Indian metallurgy contributed to:

- Weapons
- Tools
- Agricultural equipment
- Coins
- Statues
- Architectural components
- Household objects

5. Ancient Indian Mathematics

Indian mathematics made major contributions to world mathematical development.

Important Concepts

1. Decimal System

India played a major role in developing and transmitting the **decimal place-value system**.

2. Zero

The concept of zero developed in Indian mathematical traditions. **Brahmagupta** provided important rules for arithmetic involving zero in the 7th century.

3. Algebra

Indian mathematicians worked on:

- Equations
- Negative numbers
- Quadratic equations
- Algebraic methods

4. Geometry

Geometrical knowledge appears in the **Shulba Sutras**, particularly in relation to altar construction.

5. Trigonometry

Indian mathematicians developed important work involving:

- Sine
- Cosine-related ideas
- Tables for astronomical calculations

Important Mathematicians

Aryabhata

- Authored *Aryabhatiya*
- Worked on arithmetic and astronomy
- Developed important mathematical and astronomical methods

Brahmagupta

- Authored *Brahmasphutasiddhanta*
- Gave systematic rules involving zero and negative numbers
- Worked on algebra and astronomy

Bhaskara II

- Authored *Lilavati* and *Bijaganita*
- Made significant contributions to arithmetic and algebra

Importance

Indian mathematical knowledge influenced mathematical development beyond India through translations and intellectual exchange.

6. Ancient Indian Astronomy

Ancient Indian astronomy is traditionally known as **Jyotisha**, particularly in its astronomical/calendrical dimensions.

It developed through systematic observation of:

- Sun
- Moon
- Planets
- Stars
- Eclipses
- Seasons
- Time cycles

Major Objectives

Astronomy was used for:

- Calendar preparation
- Determining seasons
- Religious and agricultural activities
- Time measurement
- Predicting celestial events

Important Astronomers

Aryabhata

Aryabhata's *Aryabhatiya* contains important astronomical calculations.

He proposed that the apparent daily movement of the stars could be explained by the **rotation of the Earth**, a significant idea in the history of astronomy.

Varahamihira

His *Pancha-Siddhantika* discusses several astronomical traditions and systems.

Brahmagupta

He contributed to astronomical calculations, planetary positions and mathematical astronomy.

Bhaskara II

He developed astronomical calculations and wrote *Siddhanta Shiromani*.

Calendrical Knowledge

Indian astronomical traditions contributed to the development of:

- Lunar calendars
 - Solar calendars
 - Lunisolar calendars
 - Tithi
 - Nakshatra
 - Seasons
-

7. Indian Astronomical Instruments

Astronomical instruments were developed to **observe celestial bodies and measure time, angles and positions.**

Important Instruments

1. Gnomon / Shanku

A vertical rod or pillar used to determine:

- Shadow length
- Time
- Direction
- Solar position

2. Sundial

Uses the movement of the Sun and the resulting shadow to measure time.

3. Water Clock / Ghatika Yantra

A vessel involving water flow was used for measuring intervals of time.

4. Armillary-type Instruments

Instruments representing celestial circles were used for astronomical calculations.

5. Jantar Mantar Instruments

The astronomical observatories constructed under **Maharaja Jai Singh II** contain large masonry instruments designed for observing celestial positions and measuring astronomical quantities.

Examples include:

- Samrat Yantra
- Jai Prakash
- Ram Yantra
- Digamsha

Importance

These instruments demonstrate the use of:

- Geometry
- Mathematics
- Observation
- Engineering
- Time measurement

in Indian astronomy.

8. Indian Knowledge System – Upaveda: Ayurveda

Meaning

Ayurveda means the "knowledge/science of life." It is a traditional Indian system of health and medicine.

The word can be understood as:

- **Ayus** = Life
- **Veda** = Knowledge

Ayurveda focuses on maintaining health and managing illness through a holistic approach.

Major Principles

Three Doshas

Ayurveda traditionally describes three functional principles:

1. **Vata**
2. **Pitta**
3. **Kapha**

Their balance is considered important for health within the Ayurvedic framework.

Eight Branches of Ayurveda

Traditionally, Ayurveda is associated with **Ashtanga Ayurveda**, including areas such as:

- Internal medicine
- Surgery
- Pediatrics
- Toxicology
- Rejuvenation
- Reproductive health

Important Texts

Charaka Samhita

- Primarily associated with internal medicine
- Discusses health, diagnosis and treatment

Sushruta Samhita

- Strongly associated with surgery
- Contains descriptions of surgical procedures and instruments

Importance

Ayurveda represents an important historical Indian knowledge tradition concerning:

- Health
- Diet
- Lifestyle
- Herbs
- Preventive care

- Surgery

Note: Ayurveda is a historical/traditional medical system; its traditional claims should not automatically be treated as equivalent to evidence-based modern medicine.

9. Indian Knowledge System – Upaveda: Gandharvaveda

Meaning

Gandharvaveda is traditionally associated with **music, performing arts, singing, instrumental music and related aesthetic knowledge**.

It is often described as an Upaveda associated with the Sama Veda tradition.

Major Components

1. Vocal Music

Study of:

- Swara
- Melody
- Rhythm
- Singing techniques

2. Instrumental Music

Indian musical traditions developed numerous instruments such as:

- Veena
- Flute
- Mridanga
- Tabla
- Various percussion instruments

3. Dance

Dance combines:

- Movement
- Rhythm

- Expression
- Storytelling

4. Drama

Indian theatrical traditions developed systematic approaches to:

- Acting
- Dialogue
- Music
- Dance
- Stage presentation

Natya Shastra

The **Natyashastra**, traditionally attributed to **Bharata Muni**, is one of the most important classical texts concerning:

- Drama
- Dance
- Music
- Acting
- Aesthetics

Rasa Theory

One of its most influential ideas is **Rasa**, referring to the aesthetic experience generated through artistic performance.

Importance

Gandharvaveda represents the Indian tradition of integrating **music, dance, drama and aesthetic experience**.

10. Vedangas: Shiksha, Kalpa and Vyakarana

The **Vedangas** are six auxiliary disciplines developed to help understand, preserve and properly use Vedic knowledge.

The first three are:

A. Shiksha

Shiksha deals mainly with **phonetics and pronunciation**.

It studies:

- Correct pronunciation
- Sound
- Accent
- Syllables
- Duration
- Articulation

Importance

Because Vedic texts were transmitted orally, accurate pronunciation was extremely important.

B. Kalpa

Kalpa deals with rules and procedures relating to rituals and associated practices.

Major categories include:

- **Shrauta Sutras** – large Vedic rituals
- **Grihya Sutras** – domestic ceremonies
- **Dharma Sutras** – social and ethical duties
- **Shulba Sutras** – geometric rules associated particularly with ritual construction

Importance

Kalpa provided systematic rules for ritual and social practices.

C. Vyakarana

Vyakarana means grammar.

It deals with:

- Word formation
- Sentence structure
- Morphology
- Grammatical rules

Panini

Panini's Ashtadhyayi is one of the most influential works in Sanskrit grammar.

It presents a highly systematic description of Sanskrit using concise grammatical rules.

Importance

Vyakarana helped preserve linguistic accuracy and interpret Sanskrit literature.

11. Vedangas: Jyotisha, Nirukta and Chandas

A. Jyotisha

Jyotisha is traditionally concerned with:

- Astronomy
- Calendar calculation
- Time measurement
- Determination of appropriate ritual times

It involves concepts such as:

- Tithi
- Nakshatra
- Lunar cycles
- Solar cycles
- Seasons

Importance

It helped coordinate rituals and activities with calendrical and astronomical observations.

B. Nirukta

Nirukta is the traditional discipline of **etymology and interpretation of difficult Vedic words**.

Yaska

Yaska is traditionally associated with the *Nirukta*, one of the earliest important works on Sanskrit etymology.

Functions

Nirukta helps:

- Explain difficult words
- Determine word meanings
- Study word origins
- Interpret Vedic terminology

Importance

It supports the understanding and interpretation of ancient Sanskrit texts.

C. Chandas

Chandas is the study of **poetic metre**.

It examines:

- Syllables
- Rhythmic patterns
- Long and short syllables
- Structure of verses

Importance

Vedic texts were transmitted orally, so correct rhythm and metre helped in:

- Memorization
 - Recitation
 - Preservation
 - Accurate transmission
-

12. Indian Architecture I: Sthapatya-Veda

Meaning

Sthapatya-Veda refers broadly to traditional Indian knowledge concerning **architecture, construction, design and spatial planning**.

It is associated with traditions such as:

- Vastu Shastra
- Shilpa Shastra
- Architectural texts

Major Principles

1. Site Selection

Consideration may be given to:

- Location
- Soil
- Water
- Direction
- Environment

2. Orientation

Buildings may be planned according to:

- Cardinal directions
- Sunlight
- Climate
- Functional requirements

3. Proportion

Traditional architecture emphasizes:

- Measurement
- Ratios
- Symmetry
- Geometry

4. Spatial Organization

Different spaces are arranged according to their intended functions.

Applications

Sthapatya traditions influenced:

- Temples
- Houses
- Palaces
- Forts

- Public buildings
- Cities

Importance

It demonstrates the combination of:

architecture + mathematics + geometry + environment + aesthetics.

13. Indian Architecture II: Temples

Indian temples are important examples of traditional architecture, sculpture, engineering and religious symbolism.

Major Temple Styles

1. Nagara Style

Mainly associated with northern India.

Typical features:

- Curvilinear **shikhara**
- Garbhagriha
- Mandapa
- Sculptural decoration

2. Dravida Style

Mainly associated with southern India.

Typical features:

- Pyramid-shaped vimana
- Large temple complexes
- Gopurams
- Mandapas
- Enclosures

3. Vesara

The term is commonly used to describe architectural forms showing combinations or developments involving northern and southern traditions, particularly in parts of the Deccan.

Main Components

Garbhagriha – sanctum where the principal deity is installed.

Mandapa – hall used for gathering, rituals and other activities.

Shikhara/Vimana – superstructure above the sanctum.

Gopuram – monumental gateway, especially prominent in South Indian temples.

Temple as a Knowledge Centre

Historically, temple complexes could also function as centres for:

- Education
 - Music
 - Dance
 - Sculpture
 - Literature
 - Community activities
-

14. Indian Architecture III: Town and Planning

Indian traditions contain extensive knowledge concerning **settlement planning, urban organization, water management, roads, public spaces and environmental considerations.**

Harappan Town Planning

The **Indus/Harappan Civilization** provides important archaeological evidence of organized urban planning.

Major features included:

- Planned streets
- Drainage systems
- Standardized construction
- Wells
- Residential areas
- Public structures

Cities such as:

- Harappa
- Mohenjo-daro
- Dholavira
- Lothal

provide evidence of sophisticated settlement organization.

Traditional Town Planning Principles

Town planning could consider:

1. Roads
2. Water sources
3. Drainage
4. Residential areas
5. Markets
6. Public buildings
7. Fortifications
8. Religious structures
9. Agricultural surroundings

Water Management

Traditional Indian settlements developed:

- Wells
- Stepwells
- Tanks
- Reservoirs
- Canals
- Rainwater harvesting systems

Importance

Indian town-planning traditions demonstrate an understanding of:

- Public health
- Water management
- Transportation
- Environmental adaptation
- Community organization

15. Indian Philosophical Systems

Indian philosophy is traditionally called **Darshana**, meaning a way of seeing or understanding reality.

Indian philosophical traditions explore questions such as:

- What is reality?
- What is the self?
- What is knowledge?
- What is consciousness?
- What is the purpose of life?
- What causes suffering?
- How can liberation be achieved?

Six Major Orthodox Systems

The six classical **Astika Darshanas** are:

1. Nyaya

Associated with **Gautama/Akshapada**.

Main focus:

- Logic
- Reasoning
- Valid knowledge
- Debate
- Inference

Nyaya developed a systematic theory of knowledge and logical reasoning.

2. Vaisheshika

Associated with **Kanada**.

Main focus:

- Nature of reality
- Categories of existence
- Matter
- Atoms

Vaisheshika developed an important theory involving fundamental categories of reality and an **atomic conception of matter**.

3. Samkhya

Traditionally associated with **Kapila**.

It distinguishes between:

- **Purusha** – consciousness
- **Prakriti** – material/natural reality

Samkhya explains the evolution of experience through different aspects or **gunas** of Prakriti.

The three gunas are:

- Sattva
 - Rajas
 - Tamas
-

4. Yoga

Associated particularly with **Patanjali's Yoga Sutras**.

Yoga provides a systematic approach involving:

- Ethical discipline
- Self-control
- Physical practices
- Breath regulation
- Concentration
- Meditation

The traditional **eight limbs of Yoga** are:

1. Yama
2. Niyama
3. Asana
4. Pranayama
5. Pratyahara
6. Dharana
7. Dhyana

8. Samadhi

5. Mimamsa

Also called **Purva Mimamsa**.

Traditionally associated with **Jaimini**.

Main focus:

- Interpretation of Vedic texts
- Dharma
- Ritual action
- Knowledge of duty

Mimamsa developed sophisticated methods of textual interpretation and reasoning.

6. Vedanta

Vedanta is based particularly on the **Upanishads, Bhagavad Gita and Brahma Sutras**.

It examines:

- Brahman
- Atman
- Reality
- Liberation

Important Vedanta traditions include:

Advaita Vedanta – associated with **Adi Shankaracharya**; emphasizes non-duality.

Vishishtadvaita – associated with **Ramanuja**; presents a qualified non-dualistic understanding.

Dvaita – associated with **Madhvacharya**; emphasizes distinction between God and individual souls.

Other Important Indian Philosophical Traditions

Buddhism

Focuses on:

- Four Noble Truths
- Eightfold Path
- Impermanence
- Suffering
- Non-self
- Liberation

Jainism

Important concepts include:

- Ahimsa
- Anekantavada
- Aparigraha
- Karma
- Liberation

Charvaka

A materialist philosophical tradition emphasizing:

- Direct perception
- Material reality
- Critical examination of supernatural claims

Quick Revision Table

No.	Topic	Key Points
1	Indian Knowledge System	Holistic, interdisciplinary Indian knowledge traditions
2	Indian Culture & Civilization	Unity in diversity, traditions, values, heritage
3	Ancient Indian Chemistry	Rasashastra, dyes, medicines, materials
4	Ancient Indian Metallurgy	Iron, steel, zinc, copper, alloys
5	Ancient Indian Mathematics	Zero, decimal system, algebra, geometry
6	Ancient Indian Astronomy	Aryabhata, Brahmagupta, calendars, planetary studies
7	Astronomical Instruments	Shanku, water clocks, Jantar Mantar instruments
8	Ayurveda	Traditional Indian health system, doshas, Charaka, Sushruta
9	Gandharvaveda	Music, dance, drama and aesthetics

No.	Topic	Key Points
10	Shiksha, Kalpa, Vyakarana	Phonetics, ritual rules, grammar
11	Jyotisha, Nirukta, Chandas	Astronomy/calendar, etymology, metre
12	Sthapatya-Veda	Architecture, Vastu, geometry and spatial planning
13	Temple Architecture	Nagara, Dravida, Vesara
14	Town Planning	Harappan cities, drainage, roads, water management
15	Philosophical Systems	Nyaya, Vaisheshika, Samkhya, Yoga, Mimamsa, Vedanta

Important Names to Remember

Aryabhata → Mathematics & Astronomy

Brahmagupta → Zero, Algebra & Astronomy

Bhaskara II → Mathematics & Astronomy

Panini → Sanskrit Grammar

Yaska → Nirukta/Etymology

Patanjali → Yoga Sutras

Gautama → Nyaya

Kanada → Vaisheshika

Kapila → Samkhya

Jaimini → Mimamsa

Adi Shankaracharya → Advaita Vedanta

Charaka → Ayurveda/Medicine

Sushruta → Surgery/Ayurveda

Bharata Muni → Natyashastra

Varahamihira → Astronomy/Astrology-related classical literature

MODULE 2: INTRODUCTION TO CREATIVE PRACTICES

Detailed Exam-Oriented Notes

This module introduces a range of traditional Indian **creative practices, technical skills, performing arts, crafts, personal aesthetics, food arts, games, and decorative practices**. Many of these are traditionally discussed among the **64 Kalas (Chatushashti Kalas)** associated with classical Indian cultural literature.

For examination purposes, remember that these practices demonstrate that traditional Indian education did not separate **science, technology, art, craftsmanship and everyday life** into completely independent areas.

1. Dhatuvada – Art of Metallurgy

Meaning

Dhatuvada refers to the traditional knowledge and practice associated with **metals, their properties, processing and transformation**.

- *Dhatu* = metal/mineral element
- *Vada* = knowledge or systematic study

Main Features

Dhatuvada involves knowledge of:

1. Identification of metals
2. Extraction of metals from ores
3. Melting and heating
4. Purification
5. Alloy formation
6. Casting
7. Forging
8. Polishing and finishing

Metals Traditionally Used

Important metals included:

- Gold
- Silver
- Copper
- Iron
- Tin
- Lead
- Zinc

Applications

Metallurgical knowledge was used to produce:

- Agricultural tools
- Weapons
- Household objects
- Coins
- Jewellery
- Statues
- Architectural components

Indian Contribution

Historical Indian metallurgy includes notable traditions of **iron production, crucible steel and zinc processing**.

Exam Point

Dhatuvada represents the integration of scientific observation, craftsmanship and technological knowledge in traditional Indian metallurgy.

2. Akara Jnana – Art of Mineralogy

Meaning

Akara Jnana means knowledge of **minerals, ores and natural materials**.

- *Akara* = mine/source
- *Jnana* = knowledge

It involves identifying minerals and understanding their properties and uses.

Main Areas

1. Identification

Minerals can be identified based on:

- Colour
- Hardness
- Weight
- Texture
- Lustre
- Transparency
- Reaction to heat or other substances

2. Mining

Traditional communities developed knowledge regarding:

- Locating mineral deposits
- Excavating ores
- Processing minerals

3. Uses

Minerals were used for:

- Metal extraction
- Jewellery
- Medicine
- Pigments
- Construction
- Decorative purposes

Importance

Akara Jnana demonstrates early knowledge of **geology, mineral resources and material science**.

Short Answer

Akara Jnana is the traditional art/science of identifying, understanding and utilizing minerals and ores.

3. Vastuvidya – Art of Engineering

Meaning

Vastuvidya refers to knowledge of **construction, architecture, spatial organization and engineering principles**.

It is associated with broader traditions of **Vastu Shastra and Sthapatya Vidya**.

Main Principles

1. Site selection
2. Measurement
3. Geometry
4. Structural design
5. Direction and orientation
6. Material selection
7. Environmental considerations
8. Spatial organization

Applications

Vastuvidya was applied in:

- Houses
- Temples
- Palaces
- Forts
- Roads
- Public buildings
- Town planning

Importance

It represents an interdisciplinary combination of:

mathematics + geometry + architecture + construction + environmental knowledge.

Exam Point

Vastuvidya should not be understood only as modern engineering. It refers broadly to traditional Indian knowledge of **built environments, architecture and construction**.

4. Yantramatrika – Art of Mechanics

Meaning

Yantramatrika refers to knowledge concerning **machines, mechanical devices and mechanisms**.

- *Yantra* = machine/device
- *Matrika* = framework/system or foundational knowledge

Main Areas

Traditional mechanical knowledge involved:

- Simple machines
- Mechanical movement
- Lifting mechanisms
- Water devices
- Wheels and gears
- Construction equipment
- Agricultural devices

Examples

Historical Indian engineering traditions included devices for:

- Irrigation
- Water lifting
- Construction
- Transportation
- Agricultural activities

Importance

Yantramatrika demonstrates the application of:

- Physics
- Mechanics
- Engineering
- Practical craftsmanship

Exam Point

Yantramatrika can be understood as the traditional art of designing and operating mechanical devices and machines.

5. Takshana – Art of Carpentry

Meaning

Takshana refers to the art of **working with wood**, especially carpentry, cutting, shaping and joining wooden components.

Major Skills

1. Selection of suitable wood
2. Measuring
3. Cutting
4. Carving
5. Shaping
6. Drilling
7. Joining
8. Polishing
9. Finishing

Tools

Traditional carpenters used tools such as:

- Saws
- Chisels
- Hammers
- Drills
- Planes
- Measuring instruments

Applications

Woodworking was used to make:

- Furniture
- Doors
- Windows
- Chariots
- Agricultural tools
- Boats
- Decorative objects
- Architectural structures

Importance

Takshana demonstrates the combination of **craftsmanship, geometry, material knowledge and design**.

6. Chalitakayoga – Art of Practicing as a Builder of Shrines

Meaning

Chalitakayoga is traditionally associated with skills involved in **construction and arrangement of sacred structures or shrines**.

It involves practical knowledge related to:

- Site preparation
- Construction
- Measurement
- Layout
- Decoration
- Structural arrangement

Main Skills

1. Understanding architectural plans
2. Selecting appropriate materials
3. Preparing foundations
4. Constructing walls and structures
5. Creating decorative elements
6. Arranging sacred spaces

Importance

The practice illustrates how architecture, engineering, craftsmanship and religious-cultural requirements were combined.

Exam Point

Chalitakayoga represents practical expertise in constructing and arranging shrines and sacred structures.

7. Raupyaratnapariksha – Art of Testing Silver and Jewels

Meaning

Raupyaratnapariksha refers to the traditional art of **examining, testing and assessing silver and precious stones**.

- *Raupya* = silver
- *Ratna* = jewel
- *Pariksha* = examination/testing

Important Aspects

Testing Silver

Traditional examination could consider:

- Colour
- Weight
- Appearance
- Purity
- Physical properties

Testing Gems

Gems could be evaluated according to:

- Colour
- Clarity
- Lustre
- Hardness
- Transparency
- Shape
- Defects

Importance

This knowledge was useful for:

- Jewellery making
- Trade
- Valuation
- Quality control

Exam Point

It represents an early form of **material identification and quality assessment**.

8. Maniraga Jnana – Art of Tinging Jewels

Meaning

Maniraga Jnana refers to knowledge concerning the **colouring, enhancement or treatment of precious stones and jewels**.

- *Mani* = jewel/gem
- *Raga* = colour
- *Jnana* = knowledge

Main Activities

1. Understanding natural colours
2. Selecting suitable stones
3. Improving appearance
4. Colouring or treating materials
5. Polishing
6. Finishing

Importance

Colour is an important characteristic in determining the beauty and traditional value of gemstones.

Applications

- Jewellery
- Decorative objects
- Royal ornaments
- Cultural objects

Exam Point

Maniraga Jnana is the traditional knowledge of colouring, treating and enhancing the appearance of jewels.

9. Sucivayakarma – Art of Needlework and Weaving

Meaning

Sucivayakarma refers to the art of **needlework, stitching, embroidery and textile-related craftsmanship**.

- *Suchi* = needle
- *Karma* = work

Major Skills

- Stitching
- Sewing
- Embroidery
- Pattern making
- Decorative needlework
- Textile finishing

Materials

Traditional artisans worked with:

- Cotton
- Silk
- Wool
- Linen
- Threads of different colours

Applications

Needlework was used to create:

- Clothes
- Decorative fabrics
- Bags
- Household textiles
- Ornaments
- Embroidered garments

Importance

It represents the development of **textile technology and artistic craftsmanship**.

10. Vadya Vidya – Art of Playing Musical Instruments

Meaning

Vadya Vidya means knowledge and skill related to **playing musical instruments**.

Types of Instruments

1. String Instruments

Examples:

- Veena
- Various lutes

2. Wind Instruments

Examples:

- Flute
- Conch and other traditional wind instruments

3. Percussion Instruments

Examples:

- Mridanga
- Tabla
- Various drums

Skills Required

- Understanding rhythm
- Understanding pitch
- Instrument handling
- Practice
- Coordination
- Performance

Importance

Instrumental music has played a major role in:

- Rituals
 - Festivals
 - Entertainment
 - Dance
 - Theatre
 - Cultural ceremonies
-

11. Geet Vidya – Art of Singing

Meaning

Geet Vidya is the art and knowledge of **singing and vocal music**.

Main Elements

1. **Swara** – musical notes
2. **Raga** – melodic framework
3. **Tala** – rhythmic framework
4. Voice control
5. Pronunciation
6. Expression

Skills

A singer requires:

- Proper breathing
- Pitch control
- Rhythm
- Voice modulation
- Memory
- Emotional expression

Importance

Singing is connected with:

- Devotional music
- Classical music
- Folk traditions
- Theatre
- Dance
- Social ceremonies

Exam Point

Geet Vidya is the traditional art of vocal music involving melody, rhythm, pronunciation and expression.

12. Nritya Vidya – Art of Dancing

Meaning

Nritya Vidya refers to the knowledge and practice of **dance**.

Indian dance traditionally combines:

- Body movement
- Rhythm
- Expression
- Music
- Storytelling

Three Important Concepts

Nritta – pure dance movements.

Nritya – expressive dance involving emotions and meaning.

Natya – dramatic representation through performance.

Major Elements

- Hand gestures (**Mudras**)
- Facial expressions
- Footwork
- Body movements
- Rhythm
- Costume

Examples of Classical Dance Traditions

- Bharatanatyam
- Kathak
- Kathakali
- Odissi
- Kuchipudi

- Manipuri
- Mohiniyattam
- Sattriya

Importance

Dance preserves:

- Stories
- Myths
- Cultural traditions
- Music
- Aesthetic values

13. Natya Vidya – Art of Theatricals

Meaning

Natya Vidya is the art of **theatre, drama and theatrical performance**.

The major classical source is the **Natyashastra**, traditionally attributed to Bharata Muni.

Components

1. Acting
2. Dialogue
3. Music
4. Dance
5. Stage design
6. Costumes
7. Make-up
8. Storytelling

Types of Expression

- **Angika** – physical expression
- **Vachika** – verbal expression
- **Aharya** – costume, make-up and external presentation
- **Sattvika** – emotional/inner expression

Rasa

The concept of **Rasa** is central to Indian aesthetics.

Examples include:

- Shringara – love/beauty
- Hasya – humour
- Karuna – compassion/pathos
- Raudra – anger
- Veera – heroism
- Bhayanaka – fear
- Bibhatsa – disgust
- Adbhuta – wonder
- Shanta – peace

Importance

Natya combines several creative arts into one integrated form of cultural expression.

14. Alekhya Vidya – Art of Painting

Meaning

Alekhya Vidya means the art of **drawing, sketching and painting**.

Major Elements

- Lines
- Shapes
- Colours
- Proportion
- Perspective
- Composition
- Expression

Traditional Indian Painting

Indian painting traditions include:

- Murals
- Miniature paintings
- Folk paintings
- Manuscript illustrations
- Temple paintings

Examples

- Ajanta murals
- Madhubani
- Warli
- Pattachitra
- Miniature painting traditions

Importance

Painting was used for:

- Religious stories
- Historical narratives
- Decoration
- Portraits
- Nature
- Social life

15. Viseshakacchedya Vidya – Art of Painting the Face and Body

Meaning

This refers to the traditional art of **decorating or painting the face and body using colours and designs**.

Applications

Body decoration may include:

- Face painting
- Decorative patterns
- Festival designs
- Ritual markings
- Theatrical make-up

Materials

Traditionally, natural materials could include:

- Plant-based colours
- Mineral pigments
- Natural powders

- Oils

Importance

It has applications in:

- Theatre
- Dance
- Festivals
- Rituals
- Cultural ceremonies

Modern Relevance

Contemporary forms include:

- Stage make-up
- Face painting
- Body art
- Cultural performances

16. Udakavadya – Art of Playing Music in Water

Meaning

Udakavadya refers to the creative practice of producing **musical sounds using water and water-filled vessels**.

Method

Different containers may be filled with varying amounts of water. When struck or played appropriately, they can produce different sounds.

Scientific Principle

The sound depends on factors such as:

- Amount of water
- Size and shape of container
- Material of container
- Method of striking

Importance

This practice demonstrates the combination of:
music + experimentation + acoustics + creativity.

Exam Point

Udakavadya is an excellent example of how traditional creative practices could involve an understanding of **sound and physical properties.**

17. Manasi Kavyakriya – Art of Composing Verse Mentally

Meaning

Manasi Kavyakriya refers to the art of **mentally composing poetry or verses.**

- *Manasi* = mental/mind
- *Kavya* = poetry
- *Kriya* = creation/activity

Skills Required

1. Strong memory
2. Vocabulary
3. Imagination
4. Knowledge of metre
5. Knowledge of grammar
6. Creativity
7. Quick thinking

Features

A skilled poet could:

- Create verses spontaneously
- Maintain rhythm
- Use metaphors
- Express emotions
- Remember long compositions

Importance

It demonstrates the importance given to:

- Memory
 - Language
 - Creativity
 - Intellectual ability
-

18. Bhushanayojana – Art of Applying or Setting Ornaments

Meaning

Bhushanayojana refers to the art of **selecting, arranging and wearing ornaments appropriately**.

- *Bhushana* = ornament
- *Yojana* = arrangement/application

Types of Ornaments

- Necklaces
- Earrings
- Bracelets
- Rings
- Anklets
- Head ornaments
- Waist ornaments

Major Skills

1. Selection of ornaments
2. Matching ornaments with clothing
3. Arrangement
4. Knowledge of materials
5. Aesthetic sense

Importance

Ornaments have traditionally represented:

- Beauty
- Social identity

- Cultural traditions
 - Ceremonial significance
-

19. Citrasaka-Pupabhakshya-Vikara-Kriya – Art of Preparing Varieties of Delicious Food

Meaning

This refers to the creative art of **preparing different varieties of attractive and delicious food**.

It includes:

- Food preparation
- Decoration
- Presentation
- Combination of ingredients

Main Skills

1. Selection of ingredients
2. Cooking techniques
3. Flavour combination
4. Colour combination
5. Food decoration
6. Presentation

Traditional Indian Food Knowledge

Indian culinary traditions developed a wide range of:

- Grains
- Pulses
- Vegetables
- Fruits
- Spices
- Dairy products
- Sweets

Importance

Cooking is considered both:

- A practical life skill
 - A creative cultural practice
-

20. Dasanavasanangaraga – Art of Cleansing Teeth, Clothes and Body Decoration

Meaning

This practice relates to **personal cleanliness, grooming and the use of preparations for teeth, clothing and body decoration.**

It can be understood through three areas:

A. Dental Cleaning

Traditional practices included natural materials for cleaning teeth and maintaining oral hygiene.

B. Clothing Care

Knowledge included:

- Cleaning
- Fragrance
- Colouring
- Maintaining fabrics

C. Body Decoration

Natural preparations could be used for:

- Body decoration
- Fragrance
- Cultural markings

Importance

It reflects the traditional importance of:

- Personal hygiene
- Grooming
- Appearance
- Cleanliness

21. Utsadana – Art of Healing or Cleaning with Perfumes

Meaning

Utsadana refers to the traditional practice of **cleaning, grooming or caring for the body using fragrant substances and preparations.**

Materials

Traditional fragrant substances could include:

- Sandalwood
- Flowers
- Herbs
- Aromatic oils
- Natural fragrances

Applications

- Body cleansing
- Fragrance
- Grooming
- Relaxation
- Ceremonial use

Importance

It reflects the integration of:

hygiene + beauty + fragrance + cultural practice.

In historical context, some aromatic substances were also associated with therapeutic traditions, but traditional claims should not automatically be interpreted as modern medical treatment.

22. Vastragopana – Art of Concealment of Clothes

Meaning

Vastragopana refers to the creative skill of **concealing, disguising or arranging clothing in ways that hide or alter one's visible appearance.**

Applications

It could be associated with:

- Performance
- Theatre
- Disguise
- Entertainment
- Concealment
- Costume design

Techniques

- Draping
- Layering
- Folding
- Arrangement
- Costume modification

Importance

It demonstrates the creative use of clothing for:

- Identity
- Performance
- Storytelling
- Disguise
- Aesthetic presentation

23. Balakakridanaka – Art of Using Children's Toys

Meaning

Balakakridanaka refers to the art of **creating, selecting and using toys and games for children.**

Traditional Toys

Indian traditions include:

- Wooden toys
- Clay toys
- Dolls
- Animal figures
- Spinning toys
- Puzzles
- Building toys

Educational Role

Traditional toys could develop:

- Creativity
- Motor skills
- Imagination
- Coordination
- Problem-solving
- Social interaction

Importance

This practice shows that **play can be a method of learning and development.**

Modern Relevance

It connects with:

- Toy-based learning
- Experiential education
- Montessori-style activities
- STEM toys
- Creative learning

24. Tandulakusumabalivikara – Art of Preparing Offerings from Rice and Flowers

Meaning

This refers to the art of **creating decorative offerings using rice, flowers and other natural materials.**

- *Tandula* = rice
- *Kusuma* = flower
- *Bali* = offering

Activities

1. Selecting flowers
2. Preparing rice
3. Creating patterns
4. Arranging flowers
5. Designing offerings
6. Maintaining symmetry and beauty

Cultural Importance

Such practices are associated with:

- Rituals
- Festivals
- Worship
- Ceremonial decoration
- Community traditions

Creative Aspect

It combines:

- Colour
- Shape
- Symmetry
- Design
- Nature

25. Pushpastarana – Art of Making a Covering of Flowers for a Bed

Meaning

Pushpastarana means the creative practice of **decorating or covering a resting place with flowers**.

- *Pushpa* = flower

- *Starana* = spreading/covering

Materials

It may involve:

- Fresh flowers
- Flower petals
- Leaves
- Fragrant plants

Process

1. Select suitable flowers.
2. Arrange flowers according to colour and size.
3. Prepare a base or surface.
4. Spread flowers artistically.
5. Create patterns and decorative designs.

Importance

It represents:

- Beauty
- Fragrance
- Hospitality
- Celebration
- Aesthetic creativity

It also demonstrates traditional knowledge of **natural materials and decorative design**.

Important Classification for Examination

These 25 creative practices can be grouped into broader categories:

Category	Topics
Science & Technology	Dhatuvada, Akara Jnana, Vastuvidya, Yantramatrika
Construction & Craft	Takshana, Chalitakayoga
Jewellery & Materials	Raupyaratnapariksha, Maniraga Jnana
Textile & Handicraft	Sucivayakarma
Music	Vadya Vidya, Geet Vidya, Udakavadya

Category	Topics
Performing Arts	Nritya Vidya, Natya Vidya
Visual Arts	Alekhya Vidya, Viseshakacchedya Vidya
Literature	Manasi Kavyakriya
Beauty & Grooming	Bhushanayojana, Dasanavasanangaraga, Utsadana
Food & Culinary Arts	Citrasakapupabhakshyavikarakriya
Clothing & Disguise	Vastragopana
Children & Education	Balakakridanaka
Ritual & Decoration	Tandulakusumabalivikara, Pushpastarana

Most Important One-Line Definitions for Exam

1. **Dhatuvada** – Traditional knowledge and practice of metallurgy and metal processing.
2. **Akara Jnana** – Knowledge of identifying and utilizing minerals and ores.
3. **Vastuvidya** – Traditional knowledge of architecture, construction and spatial planning.
4. **Yantramatrika** – Knowledge of machines, mechanisms and mechanical devices.
5. **Takshana** – Art of carpentry and woodworking.
6. **Chalitakayoga** – Practical skill associated with constructing shrines and sacred structures.
7. **Raupyaratnapariksha** – Art of testing and assessing silver and precious jewels.
8. **Maniraga Jnana** – Knowledge of colouring or enhancing the appearance of jewels.
9. **Sucivayakarma** – Art of needlework, stitching, embroidery and weaving-related craftsmanship.
10. **Vadya Vidya** – Art of playing musical instruments.
11. **Geet Vidya** – Art of singing and vocal music.
12. **Nritya Vidya** – Art of dance and expressive movement.
13. **Natya Vidya** – Art of theatre and dramatic performance.
14. **Alekhya Vidya** – Art of drawing and painting.
15. **Viseshakacchedya Vidya** – Art of decorating the face and body using colours and designs.
16. **Udakavadya** – Art of producing music using water and water-filled vessels.
17. **Manasi Kavyakriya** – Art of mentally composing poetry or verse.
18. **Bhushanayojana** – Art of arranging and applying ornaments.
19. **Citrasakapupabhakshyavikarakriya** – Art of preparing attractive and varied food.
20. **Dasanavasanangaraga** – Traditional practices related to dental cleaning, clothing care and body decoration.
21. **Utsadana** – Art of body cleansing, grooming and fragrance application.
22. **Vastragopana** – Art of using clothing for concealment, disguise or creative presentation.
23. **Balakakridanaka** – Art of making and using children's toys and games.

24. **Tandulakusumabalivikara** – Art of preparing decorative offerings from rice and flowers.
 25. **Pushpastarana** – Art of creating floral coverings or decorations using flowers.
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□ Important Exam Questions

Short Answer Questions

1. Define Dhatuvada.
2. What is Akara Jnana?
3. Explain Yantramatrika.
4. What is Takshana?
5. Define Sucivayakarma.
6. What is Geet Vidya?
7. What is the difference between Nritya Vidya and Natya Vidya?
8. Explain Alekhya Vidya.
9. What is Udakavadya?
10. Explain Manasi Kavyakriya.
11. What is Bhushanayojana?
12. Explain Balakakridanaka.
13. What is Pushpastarana?
14. Write a note on Tandulakusumabalivikara.
15. What is Raupyaratnapariksha?

Long Answer Questions

1. **Explain Dhatuvada and Akara Jnana as examples of traditional Indian scientific knowledge.**
2. **Discuss Vastuvidya and Yantramatrika as traditional engineering and mechanical practices.**
3. **Explain the contribution of Takshana and Sucivayakarma to traditional Indian craftsmanship.**
4. **Discuss Vadya Vidya, Geet Vidya, Nritya Vidya and Natya Vidya as Indian performing arts.**
5. **Explain Alekhya Vidya and Viseshakacchedya Vidya as traditional visual and decorative arts.**
6. **Discuss the role of traditional food, grooming and ornamentation practices in Indian culture.**
7. **Explain the importance of Balakakridanaka in traditional learning and child development.**
8. **Discuss Tandulakusumabalivikara and Pushpastarana as examples of nature-based creative practices.**

9. **Explain how the creative practices of IKS demonstrate the integration of science, technology, art and everyday life.**
10. **Describe any five creative practices from Indian Knowledge System with their significance.**

★ Very Important 5-Mark Question

"Explain any five creative practices of the Indian Knowledge System."

For this question, a good combination is:

- **Dhatuvada** – metallurgy
- **Yantramatrika** – mechanics
- **Sucivayakarma** – needlework and weaving
- **Geet Vidya** – singing
- **Alekhya Vidya** – painting

This gives coverage of **science + technology + craft + performing art + visual art**, making the answer well-balanced.