

IDEA OF BHARAT

BA [HISTORY]
First Semester
(IDE-HIS-001-CC-1110)



INSTITUTE OF DISTANCE EDUCATION **IDE**
Rajiv Gandhi University

**RAJIV GANDHI
UNIVERSITY**

Arunachal Pradesh, INDIA - 791 112

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About the University

Rajiv Gandhi University (formerly Arunachal University) is a premier institution for higher education in the state of Arunachal Pradesh. Late Smt. Indira Gandhi, the then Prime Minister of India, laid the foundation stone of the university on 4th February, 1984 at Rono Hills, where the present campus is located.

Ever since its inception, the university has been trying to achieve excellence and fulfill the objectives as envisaged in the University Act. The university received academic recognition under Section 2(f) from the University Grants Commission on 28th March, 1985 and started functioning from 1st April, 1985. It got financial recognition under section 12-B of the UGC on 25th March, 1994. Since then, Rajiv Gandhi University, (then Arunachal University) has carved a niche for itself in the educational scenario of the country following its selection as a university with potential for excellence by a high-level expert committee of the University Grants Commission from among universities in India.

The University was converted into a Central University with effect from 9th April, 2007 as per notification of the Ministry of Human Resource Development, Government of India.

The University is located at top Rono Hills on a picturesque tableland of 302 acres overlooking the river Dikrong. It is 6.5 km from the National Highway 52-A and 25 km from Itanagar, the State capital. The campus is linked with the National Highway by the Dikrong Bridge.

The teaching and research programmes of the University are designed with a view to play a positive role in the socio-economic and cultural development of the State. The University offers Undergraduate, Post-graduate, M. Phil and Ph.D. programmes. The Department of Education also offers the B.Ed. and M.Ed. programme.

There are 37 (Thirty-seven) colleges affiliated to the University. The University has been extending educational facilities to students from the neighbouring states, particularly Assam. The strength of students in different departments of the University and in affiliated colleges has been steadily increasing.

The faculty members have been actively engaged in research activities with financial support from UGC and other funding agencies. Since inception, a number of proposals on research projects have been sanctioned by various funding agencies to the University. Various departments have organized numerous seminars, workshops and conferences. Many faculty members have participated in national and international conferences and seminars held within the country and abroad. Eminent scholars and distinguished personalities have visited the University and delivered lectures on various disciplines.

The academic year 2000-2001 was a year of consolidation for the University. The switch over from the annual to the semester system took off smoothly and the performance of the students registered a marked improvement. Various syllabi designed by Boards of Post-graduate Studies (BPGS) have been implemented. VSAT facility installed by the ERNET India, New Delhi under the UGC-Infonet program, provides Internet access.

In spite of infrastructural constraints, the University has been maintaining its academic excellence. The University has strictly adhered to the academic calendar, conducted the examinations and declared the results on time. The students from the University have found placements not only in State and Central Government Services, but also in various institutions, industries and organizations. Many students have emerged successful in the National Eligibility Test (NET).

Since inception, the University has made significant progress in teaching, research, innovations in curriculum development and developing infrastructure.

About IDE

The formal system of higher education in our country is facing the problems of access, limitation of seats, lack of facilities and infrastructure. Academicians from various disciplines opine that it is learning which is more important and not the channel of education. The education through distance mode is an alternative mode of imparting instruction to overcome the problems of access, infrastructure and socio-economic barriers. This will meet the demand for qualitative higher education of millions of people who cannot get admission in the regular system and wish to pursue their education. It also helps interested employed and unemployed men and women to continue with their higher education. Distance education is a distinct approach to impart education to learners who remained away in the space and/or time from the teachers and teaching institutions on account of economic, social and other considerations. Our main aim is to provide higher education opportunities to those who are unable to join regular academic and Vocational education programmes in the affiliated colleges of the University and make higher education reach to the doorsteps in rural and geographically remote areas of Arunachal Pradesh particular and North-eastern part of India in general. In 2008, the Centre for Distance Education has been renamed as "Institute of Distance Education (IDE)." Continuing the endeavour to expand e-learning opportunities for distant learners, IDE has introduced Post Graduate Courses in 5 subjects (Education, English, Hindi, History and Political Science) from the Academic Session 2013-14 and Economics & Sociology from the Academic Session-2018-19. Subsequently a Post Graduate Diploma in Mass Communication and other certificate courses also have been introduced in the University.

Outstanding Features of Institute of Distance Education:

1. At Par with Regular Mode

Eligibility requirements, curricular content, mode of examination and the award of degrees are on par with the colleges affiliated to the Rajiv Gandhi University and the Department(s) of the University.

2. Self-Instructional Study Material (SISM)

The students are provided SISM prepared by the Institute and approved by Distance Education Council (DEC), New Delhi. This will be provided at the time of admission at the IDE or its Study Centres SISM is provided only in English except Hindi subject.

3. Contact and Counselling Programme (CCP)

The course curriculum of every programme involves counselling in the form of personal contact programme of duration of approximately 7-15 days. The CCP shall not be compulsory for BA. However, for professional (a) courses and MA the attendance in CCP will be mandatory.

4. Field Training and Project

For professional course(s) there shall be provision of field training and project writing in the concerned subject.

5. Medium of Instruction and Examination

The medium of instruction and examination will be English for all the subjects except for those subjects where the learners will need to write in the respective languages.

6. Subject Counselling Coordinators

For developing study material, the IDE appoints subject coordinators from within and outside the University In order to run the PCCP effectively Counselling Coordinators are engaged from the Departments of the University, The Counselling Coordinators do necessary coordination for involving resource persons in contact and counselling programme and assignment evaluation. The learners can also contact them for clarifying their difficulties in then respective subjects.

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UNIT I
CONCEPT OF BHARATVARSH

STRUCTURE

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- 1.1 Objectives
- 1.2 Understanding of Bharatvarsh
 - 1.2.1 Historical Basis for the name Bharatvarsh
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- 1.4 Glory of Indian Literature
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- 1.6 Key Terms
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- 1.9 Answers to Check Your Progress

1.0 INTRODUCTION

Identity of a nation lies in its cultural heritage which includes a number of things such as the ancient name of a nation, its population complexion, its ancient philosophy, its religious belief systems, art and architecture, and above all its literature. In all aspects of culture, our country has a long tradition of antiquity. We feel proud to have the name of our nation, that is Bharatvarsh, being so ancient that it finds references in our very old literature. So, this unit gives a description of the identity of our nation as well as its eternity. At the same time, it also describes the concept of time and space as appears in the old literature of India. This unit also presents a detail description of Indian literary tradition right from the Vedas, Vedanga, Upanishads, and various other types of literature such as the epics, Jain and Buddhist literature, smriti and Puranas. All these literatures have been main sources for study of our ancient past.

1.1 Objectives

After reading this unit you will be able to understand and describe –

- the meaning of Bharatvarsh, and its antiquity
- ancient Indians' views on time and space
- various types of ancient Indian literature, their meanings, contents, and main concepts enshrined in them.

1.2 UNDERSTANDING OF BHARATVARSH

Of all identities of a country its name is the first important one because a country is identified by its name and next by the people living therein. While the land remains the same all the time, its naming keeps changing with the passage of time and due to certain forces and factors of historical change.

In case of India, it is seen that it has been called by various names, such as Jambudweep, Aryavarta, Bharatvarsha, Hindustan, and India. Today we know that our country has two official names, India and Bharat. The name 'India' for our country became popular during the British rule, however, it is also a recognised fact that our country was known as Bharatvarsh in the ancient time. This theory might have several interpretations. But this is a common concept which is accepted by all on the basis of our ancient historical tradition based on literary sources.

The name Bharatvarshin context of India has gone through test of several approaches and interpretations. Most of its references are found in ancient Indian literatures which form the main basis for knowledge and interpretations of Bharatvarsha. But India was an open land often visited and inhabited by streams of people coming from different directions in different periods of time. So, their understanding and interpretations of the land and people had been variously offered, accepted or denied.

The name Bharatvarsh stands for the land and the people who are living in the geographical boundary of modern India, and even beyond it. This name is as ancient as the historical tradition of the country. The physical boundary of a country, as history shows, keeps changing due to various forces and factors of change. It happens mainly due to coming of some new elements to a new place and getting hold over it. As the boundary changes, so name of a particular place also changes. This creates new situation for a nation to adjust with new identity. This is the same thing that has happened with Bharatvarsh the term which is unequivocally applied with India. The Constitution of India, which was framed after a long debate in the Constituent Assembly, ratified on 26th November 1949, and became effective since 26 January 1950, clearly outlines in the very first article of Part I about the identity of our nation as “India that is Bharat.” So, Bharat stands along with India as the official name of our country. The term India is also not new, as it is a Roman alteration of the Greek word Indica, which stands for ancient India. But it is interesting that in spite of several political changes in the Indian sub-continent the traditional name Bharatvarsha remained as before. So, let us understand it by historical sources.

1.2.1 Historical basis for the Name Bharatvarsh

The term Bharat has been in the memory of Indians since antiquity, the references of which appear in several of India’s old literature. Bharat is a short form of *Bharatvarsh* which is one of the several ancient names of India. It is consisted of two Sanskrit words, *Bharat* and *Varsh*. *Varsh* means part of territory or a particular land, while *Bharatis* the name of an ancient king who ruled the land in the remote past as has been mentioned in the ancient literature of India namely the *Mahabharata* and in Puranas more particularly in the *Vishnupurana*, a religious and semi-historical text that gives descriptions not only of the several of *avtars* or incarnations of Lord Vishnu but also about ancient geography and history of India. However, description in the *Adi Parva* of the *Mahabharat*, is of a different *Bharat* who was son of the king

Dushyant and Shakuntala. Shakuntala was the daughter of Rishi Vishwamitra. Dushyant and Shakuntala's story also appears in *Abhigyanashakuntalam*, the famous play of Kalidas (4th-5th Century), who was a renowned Sanskrit writer of the Gupta period. *Bharat* of the Mahabharat later on became king of Hastinapur, the place now identified near modern Delhi-Haryana region. On his name the land ruled by him came to be known as Bharatvarsh. Bharat's successors were the Kurus who were the main characters in the Mahabharat war.

The *Rig Veda*, which is the earliest known literature of human history, also gives references of the Bharats. The 3rd and 7th *mandals* (mean chapters) of the Rig Veda mention about Bharats, who were one of the ten tribes who fought in the *Battle of Ten Kings* (or *Dasrajayuddha*) for supremacy over the country known as Kurukshetra.

The tradition mentioned in the *Vishnupurana* and several other puranas such as the Brahma purana and Markandeya purana give descriptions of the origin of the Bharatvarsh as a distinct political and geographical entity. According to Vishnu purana, one of the sons of Swyambhumanu (the first man) was Priyavrat who divided seven islands or continents among his seven sons. Thus, Agneedh became the lord of *Jambudweep*, one of those seven territories. To the south of *Jambudweep* lied Himvarsh which is now known as *Bharatvarsh*. Agneedh gave this part of land to his son Nabhi. Nabhi's son was Rishabh, and his son was Bharat who inherited Himvarsh from his father. In this way, Himvarsh came to be known as *Bharatvarsh*, after the name of its holder Bharat. Since then, several generations of the dynasty ruled over it. In the first chapter of second part of the Vishnupuran the whole story of the dynasty and inheritance has been mentioned.

It states that after handing over the Bharatvarsh to his son Bharat his father went to forest.

In the third chapter of Vishnupurana there are descriptions of further divisions of Bharatvarsh, its mountains and rivers, its extent, and various types of people living in it. Thus, it has been mentioned, the country which lies to the north of ocean and south of the Himalayas is known as *Bharatvarsh* where the descendants of Bharat live.

So, on the basis of the details in the *Rigveda*, the *Mahabharata* and *Vishnupurana* it can be said that the ancient name of our country was *Bharatvarsh*, that is the land of Bharat. The details in the *Vishnupurana* quite also match with the

geographical location and population texture of present India. It is also mentioned by one another name *Aryavarta* in the *Manusmriti*, which is an ancient Law Book of Manu. *Aryavarta*, however, signifies the land inhabited by the Aryans. According to the *Amarkosh*, a thesaurus in Sanskrit written by ancient Indian scholar Amarsimha, *Aryavarta* was the sacred land between the Vindhya and the Himalayas. So many scholars on ancient Indian history think that this term was not appropriate for the whole India, as the south was known as the Deccan and inhabited by the Dravid population, supposed to be non-Aryan.

There are very few architectural evidences available on this topic. A very old inscription of India from Odisha the *Hathigumpha* inscription is perhaps the earliest architectural source which also mentions the name *Bharatvarsha*. This inscription belongs to Kharavela (1st century BCE), the king of Kalinga. It gives his biographical sketch year wise, and mentions that 'in the tenth year he sent an expedition to conquer *Bharatvarsha*.' But it does not give the exact boundary and extent of the country.

Several of Ashoka's inscriptions refer the ancient boundary of India. In the same way, the Prayag Prashasti or the Prayaga Inscription, of Samudragupta (the Gupta king) also mentions about the boundary of Indian ruling dynasties of the Ashoka time. They include not only the southern territories but also the North West frontier region. It is somehow similar to the description of Indian geographical location and its divisions as mentioned in the Puranas.

So, on the basis of the literary and architectural sources it can be said that the concept of *Bharatvarsha* is not new rather it is as old as the Indian tradition.

1.2.2 Criticism

Many modern writers on Indology have been critical on accepting the descriptions given in the ancient literature on this matter. For example, B D Chattopadhyaya, in his book *The Concept of Bharatvarsha and Other Essays*, has remarked that 'the term *Bharatvarsha*, even in geographical sense, did not appear at all.' His remark is that it was the creation of the nationalist historiography of the modern period which 'projected unitary state of contemporary *Bharatvarsha* into the distant past of ancient India.' The idea of *Bharatvarsha* was not even static but underwent contradictory development stages, as he writes. There were several *janapadas* which had separate identities. The Puranic sources also give descriptions of *janapadas* as 'separate and unequal segments. Several inscriptions of late medieval India praise many of the *janapadas* and holy places as jewels of *Bharatvarsha*.

Chattopadhyaya thinks it was ‘a device for valorizing by relating it to a universally recognized cosmographical landmark, much in the same way as a new royal lineage would seek to validate its status through affiliation with an epic-Puranic genealogy.’ Even the British historians and administrators, too, used it as a device to get legitimacy for their newly-founded state as ‘a unified and centrally oriented state.’ It was a ‘definite misinterpretation of its (Bharatvarsha’s) historical meaning’, but it was adopted by the nationalist historical writing.

India’s reference in ancient Greek and Roman tradition as *Indike* (or Indica) and India respectively, and the Persians using the term Hindustan for present India was not also referring to the whole subcontinent, rather for only certain parts of the territories. But it was taken in principle as representing the whole India. The eighteenth and nineteenth centuries maps of the British (Alexander Dow, or Rennell) referring the subcontinent used the term Hintoostan /Hindostan for the whole India without discriminating the south, while even at that time the name Bharatvarsha was still prevalent. On its basis the Constituent Assembly adopted the name Bharat along with India. At the same time the name Hindustan also continued to be referred in common culture without any exception.

Like the transmission of knowledge in ancient time, from one generation to another, the name Bharatvarsha also remained in people’s perception. Along with many other aspects of Indian traditions it was also part of popular culture which was very elegantly applied by the intellectuals during the Indian Renaissance of 19th and 20th centuries. The term Bharatvarsha mentioned either in the puranas or in the epics was not simply a spatial specific term rather it was representing many other aspects such as the different forms of land segments, rivers, mountains, islands, oceans, vegetation, animal kingdoms, occupations based on the varna system, racial composition of population, faiths and beliefs and their interactions with outer world. People living in one part must have been in contact with the other parts as any common practice used to pass throughout the subcontinent. The name Bharat was in this sense associated with ‘an internal principle of unity’ let alone it being a sacred name. P. V. Kane writes in his book *The History of Dharmashastra*, ‘Bharatvarsha itself has comprised numerous countries from the most ancient times.....There was no doubt a great emotional regard for Bharatvarsha or Aryavarta as a unity for many centuries among all writers from religious point of view, though not from a political standpoint.’ He also writes, rightly, that all the emperors of ancient times wanted to

bring the whole Bharatvarsha 'under one umbrella.' A special form of yajna or sacrifice was performed for this aggrandizement and after the victory such an emperor was designated as the sovereign or the Samrat. Sometimes it is also explained as establishment of the dharma or the order. However, its reality has been challenged.

Since the discovery, translation and decipherment of several of the Indian texts in the architectural or literary form the European writers unequivocally equated British India with that of ancient Bharatvarsha. Thus, English writer like John Muir and German Orientalist Gustav Oppert had no hesitation in accepting the name Bharatvarsha for ancient India.

1.3 Eternity of Bharat

Eternity is the term related more to philosophy than to history. It may refer to infinite time, or a very long time, or antiquity. A very long time or antiquity can be applied to ancient history, however, application of eternity as infinite time in historical sense might raise confusion, as history might not be infinite in a historical sense. The cyclical theory of history believes in a beginning and an end. Indian concept of time is itself cyclical, when one age comes after another.

Here eternity has been applied to a person and thereby to a nation. The name Bharat in ancient Indian history has been referred many times and for different persons, and all have been related to the time immemorial. One Bharat was that whose ancestry can be established with Manu, the first man, according to the Puranas. Manu was the spiritual son of Brahma, the Creator. In this sense, Bharat's ancestry is eternal.

Another Bharat was son of Dushyant and Shakuntala, as mentioned in Mahabharata. His realm has been termed as Bharatvarsha. Here the name of a person and of the territory which he ruled both coincides. It has also a long antiquity.

The Rig Veda also refers to a Bharata, the chief of a clan, who participated in the Battle of Ten Kings. In the Ramayana, the great epic, the name of Rama's brother, and second son of Dasharatha, the king of Ayodhya, was Bharat. Rama himself regarded as a divine figure. So, here Bharat's antiquity seems to be eternal.

In this sense, all the Bharats mentioned in the India's ancient tradition are quite 'eternal', if this term may be applied for antiquity. And thus, the land of Bharat, i.e, Bharatvarsha is 'eternal.'

CHECK YOUR PROGRESS - I

1. What are official names of our country?
2. In which ancient books do you find the references of Bharat and Bharatvarsh?
3. What are other names mentioned for India in ancient texts?
4. What is the significance of Hathigumpha Inscription?
5. What is the meaning of eternity in context of Bharat?

1.4 The glory of Indian literature

In this section you will read about the ancient Indian literatures which are very vast and diverse. Indian literature deals with all aspects of human activities such as philosophy and religion, state-craft, science, music and dance forms, art and architecture, grammar, prose and poetry, epics and drama, and many more aspects. They have been included in the Vedas, the Vedanga, the Upanishads, the epics, the Puranas, smritis, and Jain and Buddhist literature. You will read below about them one by one.

1.4.1 The Vedas

Written in old Sanskrit, the Vedas are the oldest texts of India; rather, they are considered as ‘the earliest document of human mind.’ They are sacred texts of the Hindus, however, by contents and philosophy included into them, they can be regarded as encyclopaedic literature.

The word Veda has its origin in the Sanskrit root *vid* which means *gyan* or knowledge. In this sense they represent the ancient repository of knowledge. In the beginning they were not in the written forms. They were recited and remembered, and transferred from one generation to another in their whole form. Since they were learnt by hearing so the Vedas were known also as the *Shrutis* means “which is heard.”

Who composed the Vedas? According to the popular belief, the Vedas are *apaurusheya*, means they were not written by any human being. This belief gives the Vedas a sacred status. The hymns of the Vedas were, rather, collected and composed by a number of sages and rishis in different periods of time, roughly between 1500 and 1000 BCE.

There are four Vedas, namely *the Rig Veda*, *the Yajur Veda*, *the Sam Veda* and *the Atharva Veda*. Among them, the Rig Veda is the oldest one. According to a belief,

in the beginning there was only one Veda, but later on it was divided into four parts, as mentioned above, by a sage of Vedic period named Veda Vyas. The four parts were respectively taught verbally to four sages namely Paila, Vaishampayana, Jaimini and Sumantu. Thus, the Vedic knowledge continued to reach from one hand to another by hearing until they were formally written down.

The Vedas are the product of the Aryans, means noble, who, according to some scholars had their origin in the Central Asia and one of their branches had migrated to India sometime in the 3rd millennium BCE. However, this foreign origin theory of the Aryans has been challenged by several Indian scholars who believe that the Aryans were the original inhabitants of India.

The Rig Veda: Among the four Vedas, the Rig Veda is the earliest and the longest. It has 10 mandalas or books with 1028 hymns or suktas and 10,600 verses. The hymns are composed in stanzas and in different poetic meters. The mandalas 2 to 7 are supposed to be the earliest and shortest. Mandalas 1 and 10 are larger, but composed in the later period. Its settings are centred in and around north-western part as there are frequent references of the rivers of the Punjab region and Sindh. They also mention about the Aryan clans such as the Kuru, the Bharat, the Puru, the Yadus and many others who had sheltered there and later on moved towards the eastern India. The hymns and verses of the Rig Veda were composed by various numbers of sages or rishis who, according to the belief, first heard their vibrations. Thus, we find names of different sages and their clans such as Angiras, Medhatithi, Vashishith, Vishwamitra, Atri, Bhardvaj and others who composed the hymns in each mandala. These hymns and verses were composed and sung to propitiate and get favours of the Vedic gods such as Agni, Indra, Som, Varun, Mitra, Aditi, Ashwini Kumar, and many others. Among them the largest numbers of hymns are in praise of Agni, followed by Indra. So, the Rig Veda is closely associated with the Vedic rituals and sacrifices which were performed by the Aryans. Apart from this the Vedic hymns also reveal some of the secrets of the universe and life, and thus they are the basis of Indian philosophy since ancient time.

The Sam Veda: The Sam Veda is the smallest of all. It has 1,549 verses, most of them are from the Rig Veda alone. Most of the verses of Sam Veda come from 9th and 10th Mandalas or books of the Rig Veda. The special feature of the Sama Veda is that its verses are in poetry form and they were meant for singing. So, they can be called

as the collection of melodious chanting. In fact, in the Sam Veda, the Rig Veda has been set in musical form. They are, perhaps, world's oldest surviving melodies.

The Yajur Veda: The Yajur Veda has 1875 verses most of which are derived from the Rig Veda. The Yajur Veda is partly in prose, and partly in verse form. Its verses contain the ritual formulas, chants and mantras for the worship of gods and goddesses such as Savita, Indra, Agni, Prajapati, Rudra and many more. In fact, the meaning of Yajur is itself worship in Sanskrit. They are primary sources of information on the Vedic sacrifices, such as the Agnihotra, Soma, Vajapeya, Rajasuya, and Aswamedha sacrifices. Yajur Veda has two parts- Shukla Yajur Veda and Krishna Yajur Veda. The literal meaning of Shukla is 'white' or 'bright', and it implies that this part of the Yajur Veda was well-arranged. The literal meaning of Krishna is 'black' which implies the un-arranged part of the Yajur Veda. Of them, there are several branches.

The Atharva Veda: The last of the Vedas is the Atharva Veda which has 20 books of 730 hymns, in which 160 are from Rig Veda. It is believed that this Veda was compiled by a Rishi named Atharva so it was named as Atharva Veda. Special feature of the Atharva Veda is that it contains verses relating to cure of human sufferings through medicines, chanting and magics. However, the subject matter of the Atharva Veda is so vast that it contains a variety of subjects apart from medicines and magics and spells. Thus, its subject matters are peace, health, wealth, friendship, long life, knowledge of Supreme reality, time, death and immortality. It has some special hymns on agriculture, education, and science. The Atharva Veda had nine branches of which only two are now available- the Shaunaka and the Paippalada branches or shakhas.

The first three, i.e. Rig, Sam and Yajur Vedas are also known as *trayi* or books of triple knowledge because they give respectively the three knowledge of recitation, chanting songs and performing sacrifices which all were essential part of Vedic culture.

Of all the Vedas, there appeared a number of branches later on due to variations in recitations and rules of rituals. Patanjali, the great grammarian of ancient time, mentions about 1,131 branches of Vedas of which 21 branches were of Rig Veda, 101 of Yajur, 1,000 of Sam, and 9 of Atharva Veda. Out of all, only 12 are available today. Some of the main branches are Shakala (Rig Veda), Taitireeya (Yajur Veda), Jaimineeya (Sam Veda), and Pippalada (Atharva Veda).

The Vedas are vast repository of knowledge of all kinds and are vital sources in understanding the ancient culture and civilisation of India. The Vedic hymns and rituals laid the foundation of Hindu religion and they are still being observed and performed as they were performed thousands of years back. It reveals the continuity of some of the ideas of the Vedic culture even in the modern times.

The whole Vedic literatures have been divided into fourparts- Samhita, Aranyaka, Brahman and Upanishad. The Samhitas are collections of hymns that were sung in the praise of gods. They have actually been compiled in the four Vedas mentioned above. The Vedic literature after the Vedas is called as 'Brahmana', mostly in prose. They contain descriptions on the methods of sacrifices and other religious rituals. To each Veda are attached a certain number of Brahmins, for example, the Aitareya and Kaushitaki Brahmanas are attached to the Rig Veda; the Jaiminiya and Chhandogya Brahmanas are attached to the Sam Veda; the Shatapatha Brahmana is attached to the Yajur Veda; and Gopatha Brahmana to Atharva Veda. In the end part of the Brahmins the results and effects of a karma or action are described. They are known as the Aranyakas. They also contain some philosophical deliberations, as they prescribe meditation and moral values more than the rituals and sacrifices. They were to be studied in forests, in a lonely environment. After the Aranyakas, come the Upanishads, which is full of philosophical ideas. So, it is also known as the gyan-kaand or abstract knowledge section of the Vedas. Sometimes, Upanishad is also termed as Vedanta, since this is the end part of the whole Vedic knowledge, after which nothing more is left to be learnt. This is the climax of the Vedic interpretation.

1.4.2 Vedanga

The Vedic knowledge as put into the Vedas was written in Sanskrit. It was very difficult, sometimes, especially in the later period, for the learners to understand the real meaning infused in it. So, an attempt was made to codify the Vedic knowledge and thereby simplify it. For this, some auxiliaries of Vedas were brought into which were termed as the Vedanga which means the organs of the Vedas. They are six, namely *shiksha*, *chhand*, *vyaakaran*, *nirukt*, *kalpa*, and *jyotish*. Let us understand one by one-

1.4.2.1 Shiksha- It was important in the Vedic study to learn how to pronounce the Vedic words composed in hymns to get accurate result while performing a ritual. Shiksha or phonetics provided learning of Sanskrit letters, their

pronunciation, stress to be given on a particular letter during recitation, and melody to follow.

1.4.2.2 Chhanda– Chhand is a very nice part of Vedic hymns. In English it is called as prosody or meter. In each Vedic sukta or hymn its chhanda, such as Gayatri chhanda, for example, is also mentioned along with the name of rishi or the sage who composed it. Chhanda fixes the number of syllables in a hymn and matraa or mora on the letter, and likewise stress to be given on that particular place while reciting it. It is essential for recitation of a hymn, to get its poetic beauty. There are 26 chhandas in the Vedas, thus 13 in the Rig Veda, 8 in the Yajur Veda, and 5 in the Atharva Veda. Some of the chhandas are Gayatri chhanda, Anushtupchhanda, Prakriti Chhanda, etc.

1.4.2.3 Vyaakarana–It means grammar. It is an important part of Vedic study, which forms the grammatical rules and linguistic analysis to understand the Vedic texts. The Panini's Vyakaran is considered as the oldest.

1.4.2.4 Nirukta– It means study of words composed in the Vedic literature or their etymology. It helps in the proper understanding of a word in hymn. It reveals the internal meaning of the hymn. It is written in the prose form, while other branches of Vedanga are in sutra or thread. In fact, it is a treatise on the Nughantu of Yaska. Many think nirukta was actually the work of Yaska.

1.4.2.5 Kalpa–Kalpa outlines instructions to follow while performing any Vedic ritual concerned with birth, marriage, death or personal conduct in everyday life. From Kalpa began the age of sutras. Thus, the Kalpa has three main forms or sutras, the *shrout sutra*, the *grihya sutra*, and the *dharma sutra*. They contain rules to be performed in observance of social obligations and rituals. They enriched the Vedic literature and made popular the Vedic culture.

1.4.2.6 Jyotisha– It is Vedic astrology. The Vedic literature has dealt about time and space, and position of heavenly bodies and their implication on human beings. Jyotish prepares calendar and determines dates for rituals according to Vedic tradition.

It cannot be said clearly that when did these six organs of the Veda fully developed, however there is the reference of the earliest grammarian named Yaska, between 7th and 5th century BCE, who was the author of Nirukt, a book on Sanskrit grammar. Yaska is supposed to have prepared also the Nighantu, or glossaries of Sanskrit terms, which was attached to his book Nirukta. He was before Panini, who wrote Ashtadhyayi. Panini was a Sanskrit philologist who is regarded as father of

linguistics. With the coming of Vedanga the study of Vedic literature and further writing on it were systematised.

1.4.3 Upanishads

Each Veda is consisted of Samhita, Brahman, Aranyaka and Upanishad. Samhita is simply the collection of Vedic hymns. The Brahmana, written in prose, contains commentaries on Vedic rituals and sacrifices and functions of the priests. Aranyaka contains such knowledge as supposed to be secret rites and philosophical speculation on the Vedas which were studied not in the public but in the wilderness. Since they were studied in forest so they were termed as Aranyakas; *aranya* means forest. Some portions of Aranyakas also have philosophical contents similar to Upanishads. Thus, both Aranyaka and Brahmana are related to *karma-kandor* action performing knowledge which was used in performance of yajna or Vedic sacrifices. But the Vedas have one another aspect that is *gyan-kandor* learning the abstract wisdom, such as what is Brahma, the creator; how the world came into existence; what is the soul, etc. They are dealt in a separate part which is known as *gyan-kand*. Upanishads are related to the second part of Vedic knowledge. It is the highest point of Vedic learning, and sometimes it is also known as the *Vedanta*, that is, the conclusion of the Vedas. The Upanishads have been written in Sanskrit.

The literal meaning of Upanishad is ‘sitting nearby devotedly.’ It means the disciples used to sit near their gurus in a devoted and most respectful manner and learnt the basic philosophy enshrined in the Vedas. The teacher who was well versed in the Vedic knowledge imparted this secret knowledge only to the well qualified disciples.

Upanishads actually interpreted the Vedic knowledge in a new way but according to the true spirit of the Vedas. They are indeed Vedas themselves. With the passage of time the number of Upanishads continued to swell according to their authors and interpreters. Traditionally their number is 108, but it is supposed it may be more than 200. They are related to one or the other Vedas. Below names of some of the most popular Upanishads are given along with the names of Vedas of which they part-

Aitreya Upanishad (part of the Rig Veda); Kaushitki Upanishad (part of the Rig Veda); Chhandogya Upanishad (part of the Sam Veda); Kena Upanishad (part of the Sam Veda); Brihदारanyak Upanishad (part of the Shukla Yajur Veda); Ishavasyopnishad(part of Shukla Yajur Veda); Taitriya Upanishad (part of the

Krishna Yajur Veda); Katha Upanishad(part of Krishna Yajur Veda); Svetasvatara Upanishad (part of Krishna Yajur Veda); Mundak Upanishad (part of the Atharva Veda); Mandukya Upanishad (part of the Atharva Veda); and Prashna Upanishad (part of the Atharva Veda).

Yajur Veda, both Krishna and Shukla combinedly has the largest number of Upanishads. Most of the important Upanishads were written between the completion of the Vedic hymns and before the rise of the Buddhism.

The importance of Upanishads is that in them is rooted all the Hindu theology, and also the Buddhist principles. Their authorship is not one, rather they are composed by many, at different periods of time. However, their contents are much the same, which give a strong foundation to Hindu religion and philosophy. Several commentaries were also written on the Upanishads. Acharya Shankara's commentary *the Vedant Sutra or BrahmaSutra* is the earliest. He compiled the teachings of Upanishads in a nut-shell. The Upanishads reveal the meaning and purpose of life. They also claim to solve the secrets of universe and man's relation with it. They offer certain codes of conduct which a man should follow to obtain a peaceful life. Upanishads interpret the Vedas but, as S. Radhakrishnan writes, 'they attempt to moralise the religion of the Vedas without disturbing its form.' Different gods mentioned in the Vedas are not seen as polytheistic nature of religion, rather the Upanishads prove the monistic nature of the Vedic religion. Further, they simplified the religious faiths and beliefs which were reflected in many heterodox sects such as Buddhism. Attainment of moksha or liberation from cycle of birth and rebirth, and permanent bliss is the sole purpose of the Upanishads' teaching.

1.4.4 The Epics

Indian Epics are very vast poetry books, written in classical Sanskrit, and also in other languages such as in Tamil. Epics give an exhaustive and lengthy description of several generations of ruling dynasties, mythological or real, life history of a number of personalities and their environments. They contain verses in thousands and thousands in number.

In Indian tradition two epics are most important, *the Ramayana* and the *Mahabharata*. The *Ramayana* was composed by an ancient sage named Valmiki and the *Mahabharata* was composed by Veda Vyas. Their composition also belongs to the Vedic period, however, the stories mentioned in them are, of the *Treta* and *Dwapara* Age, according to the Vedic time scale.

The *Ramayana* has 24 thousand slokas and ten chapters, written in Sanskrit. It contains the life history of Lord Rama, who is regarded as one of the *avtars* or incarnation of Vishnu. In this sense Ramayana can be called a religious book of the Hindus who worship Rama as a God, but Ramayana is more than a religious book. Through the life-history of Rama the ancient history of Indian dynasties of Solar tradition has been told, along with a detailed description of the land, people, environment, geography, state and social system, family relations, ethics, and war strategy. Capital of Rama's state was in Ayodhya in the present Utter Pradesh where his father Dasharath had ruled. Rama was married to Sita of Videha (Mithila). There appeared a conflict in the family over issue of succession in which Rama was banished to forest for 14 years. He lived there along with his wife and younger brother Lakshmana and explored the whole continent. Finally, a war broke out with the king of Lanka, Ravan, who had kidnapped Sita. The war brought the demise of demon king and victory of Rama, the victory which is often seen as victory of good over the evil. The importance of this epic story is that it is being told and listened with devotion by the Hindus since its composition, uninterruptedly. Moreover, Rama is regarded as the unifier of whole Indian subcontinent as his story has been written in all languages in India. Several versions of Ramayana are available with slight variations but the spirit of the story has been the same. The story of Ramayana also influenced the Southeast Asian countries like Indonesia and Bali where in the early period the people of the region used to worship Rama as God.

The Mahabharata, written in Sanskrit, is a bigger book than the Ramayana. It has originally 24 thousand slokas but eventually it gone up to one lakh which means there had been an addition to it in the later period after its original composition. It is regarded as a history book of ancient India as it contains enough historical materials of the remote past. The vastness of its subject matter makes it like an encyclopaedic work in which reference of everything can be found. It is often said that there is everything in the Mahabharat. The main subject of Mahabharat is the War which occurred between the Kaurava and Pandava, belonging to the same family of the Kuru. It was a family feud for control over the throne of Hastinapur, the centre of which was near Haryana-Delhi. But the war engulfed the states of whole subcontinent, the belligerent states fighting from one side or the other. It was the fiercest war fought for eighteen days resulting in the victory of the Pandavas and extinction of the Kauravas. The Mahabharata is also a widely read literature of India

and has been translated almost in all languages of the world. It has been an important reference book for ancient statecraft and state system in India. In the *Shanti Parva* of Mahabharata, *Bhishma* who is one of the main characters in it, outlines the state policy to be followed by the king in a just state. *Bhagavat Gita* is a very important part of the Mahabharata. Just before the beginning of the Mahabharata war Lord Krishna, an important character in the book who was on the side of the Pandavas, gave a sermon to Arjuna on the theme, why should he fight this war. The Gita is in beautiful poetic form in Sanskrit. It is considered not only a sacred book of the Hindus but all over the world it is regarded as one of the most exceptional literatures of India. It has also been called as one of the Upanishads. It contains the whole ancient Indian philosophy in essence. It is still a widely read book all over the world.

1.4.5 Jain and Buddhist Literature

Indian classical literature became very diverse and vast with the rise of heterodox sects in 6th century BCE. Meaning of heterodox sects is that they were had no faith in the Vedic traditions. Jainism and Buddhism were two most important such groups. As their popularity grew, they added books in a large number depicting new theories, practices and customs prevalent at that time.

1.4.5.1 Jain Literature

Jainism was founded by Vardhman Mahaveer in ancient Bihar. It was founded as a reaction against some of the practices and beliefs of the Vedas. The teachings of Jainism were first compiled as the *Angams* or the parts. They were twelve in number, compiled between 6th and 4th century BCE. They are in the Ardhamagadhi Prakrit language which was spoken prominently at that time in Bihar and in some parts of Uttar Pradesh. They were compiled first orally in the first Jain Council held at Pataliputra and later on scripted, mostly by the Svetambara branch of the Jains. Gautam was one of the chief disciples of Mahaveer who had done the work of compilation. It should be known that the Jain followers were divided between the *Svetambara* (the Jain monks wearing white cloths) and *Digambara* (those who wore nothing). Many of the original works of *Angams*, however, were either lost or destroyed due to the crisis of the Mauryan period or due to some natural calamity such as flood and famines. The *Digambara* monks did not accept the *Angams* prepared by the *Svetambara* and so they compiled their own. Much later, in the 5th century CE another council of the *Svetambara* was held at Vallabhi (Bhavnagar, Gujarat) where the *Angams* were recompiled.

The main Angams are- 1. Ayaramga (dealing monastic conduct), 2. Suyagada (on heretical systems), 3. Thanamga (on different points of teachings), 4. Samavayamga (related to other groups), 5. Viyaha -pannatti or Bhagavati (on the the Holy one), 6. Naya-dhamma-kahao (contains religious stories), 7. Uvasaga-dasao (ten chapters on Jain followers), 8. Anuttarovavaiya-dasao (‘Ten chapters on those who put an end to rebirth in this very life’), 9. Anuttaraupapatikadasah (Ten chapters on those who were reborn), 10. Panha-vagarana (‘Questions and Explanations’), 11. Vivaga-syua (‘Bad or good results of deeds performed’).

Besides them there are twelve Upangas (auxiliary parts), six chedasutras (texts relating to the conduct and behaviour of monks and nuns), four mulasutras (fundamental texts), and two chulikasutras (appendixes). There are also ten Painnaya or miscellaneous texts. They are the main canonical texts of the Svetambara Jains.

The Digambar branch of Jains also compiled their texts which are more than twenty, consisting of main texts and several commentaries. The oldest Digambar text is supposed to be the Satkhandagama (Six-Part Books) which were written by Acharya Pushpandata and Bhutabali in the 2nd -3rd century CE. Acharya Gunadhara wrote Kasayapahuda (A Treaties on the Passions). Both the books are considered as the main Digambar Angamas. Virasena, a Digambara monk and great mathematician of his time (8th century CE), wrote two commentaries on Satkhandagama namely the *Dhaval-tika* and *Maha-Dhaval-tika*. Acharya Jinsena (9th century CE), a disciple of Virasena, was another great teacher of Digambara Jains. He was patronised by Rashtrakuta king Amoghvarsha. He completed the commentary on Dhaval of his teacher, and also wrote two most popular books *Adipurana* and *Mahapurana*. *Adipurana* is an encyclopaedic work containing a vast number of issues in it. He had challenged the Vedic version of the creation of Universe by God.

The above-mentioned texts are the canonical works on Jainism written with both Svetambara or Digambara ideas and principles. But first time a comprehensive Jain text in Sanskrit was written by Umasvati or Umaswami. The name of his book is Tattavarth Sutra. Its importance in Jain literature is similar to the Vedanta Sutra of the Hinduism. He had outlined seven categories of truth and said that ‘all life, both human and non-human, is sacred.’

As has been mentioned, in the beginning the Jain texts were written in the Prakrit, but later on a tendency developed in Jainism to compose texts more and more in Sanskrit. At the same time, apart from the canonical texts several other types of

texts were also written. Some of the examples of Jain texts are- Avasyaksutra of Jinabhadra, Nayacarak and Dvadasaranyacara of Mallavadin, Yogabindu of Haribhadra (he had written a number of books on Yoga and Jain principles), Yogashastra of Hemachandra. Pujyapada and Hemachandra had also written some very nice books on grammar. Harivamsh purana of Jinsena (738 AD) is one of the most popular books of a Jain acharya. Perhaps he was the same Jinsena as mentioned above. This book has 12,000 slokas. A very important part of the book is that it describes the characters like Krishna, Arjun, and Draupadi of Mahabharata in a different way. Some of the Jain texts are also written in Tamil and Kannada. Many portions of Sangam literature are supposed to have contributed by Jain scholars. Sangam literature is the ancient poetry book in Tamil.

1.4.5.2 Buddhist Literature

Buddha was a contemporary of Mahaveer. So, both the Jainism and Buddhism appeared at the same time, and in the same region, that is ancient Bihar. Like Jainism, Buddhism also contributed a large in the Indian literary development. In the beginning, the Buddhist texts were also in oral forms which were composed in languages such as Pali, Prakrit and, later on in Sanskrit. Early Buddhist texts were mostly religious, containing teachings of Buddha, or Dhamma. Later on, they came in various other forms. Buddhism also suffered schism in its fold after the Second Buddhist Council held at Vaishali after one hundred years of Mahaparinirvaana of Buddha. Thus, two schools, namely Theravada and Mahasanghika came into existence. They were also known as Hinayaan and Mahayaan. Both contributed to the Buddhist text. But oral tradition continued for a long time until the 1st century BCE when they were written in the Pali.

Tripitak: The earliest Buddhist texts were known as Tripitaka, means basket of three or the three books. They were Sutta Pitak, Vinay Pitak, and Abhidhamma Pitaka. The main teachings of Buddha are collected in the Sutta Pitak, which has further five divisions or Nikayas, namely the Digha Nikaya or long teachings; Majjhama Nikaya or medium length teaching; Samyukta Nikaya or some common and shorter teachings; Anguttar Nikaya or 'a collection arranged to subject discussed'; and Khuddak Nikaya or other shorter texts in prose and verses. The Vinaya Pitak is the collection of rules and norms of disciplines to be followed by the Buddhist monks and nuns who lived in the Sangh or Buddhist monasteries. It has further three divisions. The higher and other teachings of Buddha have been collected in the Abhidhamma

Pitaka. It has seven books which give more philosophical base to Buddhism. They all were written on the palm leaves and preserved with utmost care. In the 1st century CE, Tripitakas were also written in Sanskrit keeping the same subjects intact as they were in the original Pali. More Sanskrit Canons were written by the Buddhist scholars who followed the Mahayana branch. Many new things were added by them in the sutras. Some of the main Sanskrit sutras are- Prajnaparamita Sutra, the Saddharma Pundarika Sutra, the Vimalakirtinirdesa Sutra, Sukhvati Sutra.

Jataka Tales: They are interesting part of Buddhist literature which are mostly included in the Khuddak Nikaya of Sutta Pitaka. They were composed between 300 BCE and 400 AD. They belong to the Theravada Buddhism and mostly written in Pali, and in poetic form. Some stories have commentaries in prose. They are the stories related to previous births of Buddha either in human or in animal forms. Several Jataka tales have also been found in painting form in the Ajanta Cave of Maharashtra. The tales narrated in the Jataka have moral lessons. They are like Panchatantra stories. Some of very popular stories are, for example, the Rabbit in the Moon, the Monkey and the Crocodile, the Crab and the Crane, etc. They have been translated into many languages and are very popular still today.

Other Buddhist Texts: While we find early Buddhist texts were in Pali, since the 1st century CE more and more Buddhist texts were written in Sanskrit. Some of the contemporary writers who used Sanskrit as medium to write Buddhist books are- Ashwaghosa (famous author of Buddhacharit), Nagarjuna, Aryadeva, Asanga, Vasubandhu, Dignaga, Dharmakirti, and Chandrakirti. Buddhacharit of Ashwaghosa is a Sanskrit epic written as a biography of Buddha. Nagarjuna was a Mahayana Buddhist philosopher who founded the Madhyamika (middle path) branch of Buddhist philosophy. It is also known as Shunyavada or emptiness. Aryadeva was a disciple of Nagarjuna. His best-known work is Chatussataka (Four Hundred Verses). He had worked in the ancient Nalanda University. Asanga has composed Mahayanasangraha. He had also worked in the Nalanda University. Vasubandhu was half-brother of Asanga. He had written several books on Mahayana and also worked at Nalanda. Dignaga was the founder of Indian Buddhist logic which was described in detail in his book Hetuchakra. Dharmakirti was a Buddhist philosopher who composed Pramanavarttika, a book of Buddhist logic and epistemology. This book also influenced several Hindu systems of philosophy. Chandrakirti wrote

commentaries on the works of Nagarjuna and several of his disciples. His main works are Prasannapada and Madhyamakavatara.

Buddhism was also influenced by the tantric sect prevalent in the country. So, a number of Buddhist texts are also available in this branch of Buddhism. Tantric Buddhism is also known as Vajrayana School which is more popular in Tibet. Its main texts are- Kriya Tantra, Charya Tantra, Yoga Tantra, and Anuttaryoga Tantra.

1.4.6 Smriti

The interpretations of Vedas were continued all the time. You have seen that the Brahmanas, Aranyakas and Upanishads had brought several interpretations of the Vedas. In the same way the Smritis came in the later period. Smritis are ancient classical literature of Vedic tradition. The literal meaning of Smriti is memory. There are a number of Smritis which are supplementary works of the shruti or the Vedas. Vedas were verbal composition and were authorless, but smritis were composed by definite authors or sages who composed them by their memory. Smritis are in fact interpretations of Vedas out of which Vedic knowledge was codified, and brought to general use in day-to-day life. The canvass of smritis is very vast as they include in their fold almost all subjects of classical knowledge such as Vedang, Itihaas, Epics, Varnashram Dharma, Puranas, Sutras, Kavya, Bhashya and Nibandha.

Traditionally the number of Smritis is twenty. Some very important smritis are- Apastamba Smriti, Vishnu Smriti, Katyayana Smriti, Brihaspati Smriti, Parashar Smriti, Gautam Smriti, Vashistha Smriti, Yajnyavalka Smriti, and Manu Smriti. Smritis were written for specific purposes, for example, to study and to let know the people grammar, poetry, logic, justice, rules for household, family matters, sacrifices, duties of different varnas, and duties of the ruling class and so on.

All the Smriti literature have been organised in two methods, one is Sutra form, and the other is in metrical form. Sutra, literal meaning thread, is a short statement of two-three words like a formula, by which information is given in brief. Sutra has been composed in systematic and sequence order, placing one relevant sutra after another. It makes the book concise and the subject matter easy to understand. *Dharma Sutra* is a good example of this pattern. Some smritis are very descriptive, written either in prose or in poetry. They present the subject matter in detail. Their examples are the Manusmriti and Itihasa Puranas.

1.4.7 Puranas

Purana is a Sanskrit word which means very old or ancient. Puranas were mostly written in Sanskrit, though some are in Tamil and other Indian languages too. They are the most popular literature of India in the sense that they brought down historical and religious traditions to the common people. They are sacred and semi-historical literature of India. Sacred in the sense, they give details of Hindu gods and goddesses such as Vishnu, Shiva, Krishna, Durga, Sarasvati and many more. Several of Puranas have been composed exclusively in the praise of one God or another. Thus, the Vishnu Purana is concerned with various incarnations of Vishnu; the Shiva Purana for worship of Shiva; the Bhagwat Purana for Krishna. It is important to note that various gods and goddesses mentioned in Puranas are still being worshipped by the Hindus in the same way as before, and so it is the example of continuity of Hindu culture since antiquity.

The Puranas have also historical parts. They provide genealogies of a number of historical and mythological dynasties, along with their kingdoms. They also provide a strong basis to study ancient Indian political system.

Besides them, Puranas contain vast number of folk tales and stories, descriptions of temples, pilgrimage, medicine, astrology and astronomy, grammar, philosophy and theology. In this way, they are encyclopaedic in nature. The Puranas have five special characteristics or PanchaLakshana, as mentioned in Matsya Purana. Those characteristics or features are- Sarga, means creation of the world; the Pratisarga, means cosmogony and cosmology; Vamsa, means genealogy of gods, sages and kings; Manvantara means cosmic cycles, or history of the world during the time of one Manu or the first man; and the Vamsanucharita means account of royal dynasties.

Commonly, the Puranas belong to Hindu tradition, but they can also be found in Jainism, for example, Harivamsh Purana, which is a work of Jain literature. Traditionally Vyas, who had compiled the Mahabharata, is also credited with composition of the Puranas which were transferred orally to his disciples who further continued the tradition. In the beginning there was only one Purana which was known as the Maha Purana, or the Great Purana, from which the other 17 Major Puranas or Mukhya Puranas and 18 Minor Puranas or Minor Puranas were extracted. They have more than four lakhs' verses. Historians set their timing of composition between 3rd and 10th century CE.

The eighteen main Puranas are- *Brahma Purana, Padma Purana, Vishnu Purana, Shiv Purana, Bhagavat Purana, Narada Purana, Markandeya Purana, Agni Purana, Bhavishya Purana, Brahmavaivarta Purana, Linga Purana, Varah Purana, Skanda Purana, Vamana Purana, Kurma Purana, Matsy Purana, Garuda Purana, and Brahmanda Purana.*

The Puranas have been equated with history, as the term Itihas-Purana for Purana has also been mentioned in the Shatapatha Brahmana, the Chhandogya Upanishad, and in the Kautilya's Arthashastra. Further, the Purana has also been called as the Pancham Veda or the Fifth Veda. The reason is that the true essence of Vedic knowledge has been compiled in them, and relating them with popular practices. So, the abstract knowledge of the Vedas was simplified and brought to the people in the form of tales and stories. In fact, the Puranas made more popular the Hindu culture and so we find still today tradition of reading of the Puranas on special occasions and ceremonies.

Check Your Progress II

1. What do you mean by the Veda? Name the four Vedas.
2. Name the five rishis who composed hymns in the Rig Veda?
3. What are the main subjects of Atharva Veda?
4. What is the meaning of Upanishad? Name ten Upanishads.
5. What is Vedanga? Name six Vedanga.
6. Which are the two main epics of India?
7. What do you mean by Jain Angams?
8. Which are the three Pitaks?
9. What is the significance of Jataka Tales?

1.5 Let Us Sum Up

This chapter summarizes the evolution of ancient culture as was founded on the basis of the Vedas and their allied texts. In fact, the Vedas prepared the philosophical background for life style of the Aryans and the people who were brought under the Vedic fold. The name of our country, Bharatvarsha, itself has its origin in the ancient texts. Since antiquity this name has been in the popular culture, and so it was adopted in our modern times too. India was one of the few ancient nations which had such a strong cultural base. Whereas many ancient civilizations are no more in continuation,

our culture is still alive since antiquity. It shows that its foundation was deep-rooted in the mind of people, and thanks to our ancestors who continued to practice and hand-over their faiths and beliefs, language and literature, art forms, social practices and values to next generation that this culture is thriving and still evolving.

1.6 Key Terms

Bharatvarsha - the ancient name of India

Veda – the storehouse of ancient knowledge of India

Vedanga – auxiliaries of the Vedas

Nasadiyasukta – a very important Sukta or hymn of Rig Veda which describes Indian cosmology and origin of the universe

Tripitaka – an important Buddhist text, literal meaning basket of three

Jataka Tales – Buddhist texts of popular stories containing moral lessons

1.7 Questions and Answers

1.7.1 Short-Answer Questions

1. Discuss the tradition mentioned in Vishnupurana for Bharatvarsh.
2. What do you mean by the term eternity of synonymous Bharat?
3. How are the ages divided in Indian tradition? Discuss with reference.
4. Write a short note on Indian calendar.
5. Write a short note on the smriti.
6. What is the Jataka Tales? Discuss their significance.
7. What do you mean by Tripitaka. Discuss its significance.

1.7.2 Long-Answer Questions

1. How did India get the name Bharatvarsha? Discuss with appropriate reference.
2. Discuss the Indian concept of time and space.
3. What are the Vedas? Discuss the main features of the four Vedas.
4. Write an essay on the Upanishads and the epics.
5. What are the Vedanga? Discuss the significance of Vedanga in Indian literature.
6. Discuss the contributions of Jain and Buddhist literature in Indian history.

1.8 Further Readings/Suggested Readings

A. MacDonell, A History of Sanskrit Literature

A. B. Kieth, Religion and Philosophy of the Vedas and the Upanishads

A. L. Basham, The Wonder That Was India

B. D. Chattopadhyaya, The Concept of Bharatvarsha and other Essays

R. K. Mukherjee, The Fundamental Unity of India

Rajesh Verma, Idea of Bharat

S. Radhakrishnan, Indian Philosophy, Vol. 1

1.9 Answers to Check Your Progress

1. Check Your Progress – I Answer 1. See 1.2; Answer 2. See 1.2.1; Answer 3. See 1.2.1; Answer 4. See 1.2.1; Answer 5. See 1.3

2. Check Your Progress II – Answer 1. See 1.5.1; Answer 2. 1.5.1; Answer 3. 1.5.1; Answer 4. 1.5.3; Answer 5. 1.5.2; Answer 6. 1.5.4; Answer 7. 1.5.5.1; Answer 8. 1.5.5.2; Answer 9. 1.5.5.1

UNIT II
INDIAN KNOWLEDGE TRADITION, ART AND CULTURE

Structure

- 2.0 Introduction
- 2.1 Objectives
- 2.2 Evolution of Languages and Scripts
 - 2.2.1 Sanskrit
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 - 2.3.1 Rock and Cave Paintings
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- 2.4 Indian Education System
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 - 2.4.4 South Indian System

- 2.5 Let us Sum Up
- 2.6 Key Terms
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 - 2.7.1 Short-Answer Questions
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- 2.8 Further Readings/Suggested Readings
- 2.9 Answers to Check Your Progress

2.0 Introduction

Human beings are knowledge seekers. They gain knowledge and store it for future generations. Knowledge is stored in various forms, such as, literature, art, and architecture. Since the Stone Age, human beings have sought knowledge and stored it in some form or the other. They made different types of tools, implements, structures, and paintings with their experience. But with the invention of scripts, it became easier to store knowledge in the form of literature. So, all great ancient societies, such as the Egyptians, the Babylonians, Chinese, Greek, Roman or the Indians developed some form of script or the other. Earlier scripts were in the form of picture. They were known as pictograph. They continued to develop and today they are in their present forms. In fact, only with the coming of scripts the progress of civilisation took a big stride because it facilitated the storing and dissemination of knowledge. Ancient Indians also stored their knowledge gained through experience in various forms such as in literature, art and architecture which are still available for us.

2.1 Objectives

After reading this unit you will be able to know about and analyse the Indian knowledge system such as

- Evolution of Indian languages and scripts
- Different types of art and architecture such as paintings, architecture, and sculpture
- Indian education system, and ancient institutions, and
- Ethics of Indian valour as described in our ancient literature

2.2 Evolution of languages and scripts

India is a country of cultural diversity which is seen in the religious practices, faiths and beliefs, life-pattern of Indian people, and above all their languages. The first linguistic survey of India was done during the British period by George Abraham

Grierson in 1928. He identified 364 languages and dialects spoken in India. Later on, further researches went on, and on their basis at present more than four hundred different languages have been identified in India which makes it the fourth largest country in term of linguistic diversity. Indian languages can be divided into four main categories or language families, such as Indo-Aryan language, Dravidian language, Austro-Asiatic language, and Tibeto-Burman language. It is also important to know that names of these language families are also the same for the racial identification of the people.

Among them, the speakers of Indo-Aryan family are the largest in number. It is considered as one of the branches of the great language family known as the Indo-European family because of the similarities of languages such as the Latin, Greek, Persian and Sanskrit. The Aryan language, the basis of which is Sanskrit, has an uninterrupted history of 3500 years in India. It developed in different stages. Most of the modern Indian languages have originated from the Indo-Aryan family, having either Sanskrit or Persian at their roots. Some of them are, for example, Assamese, Bangla, Dogri, Gujarati, Hindi, Kashmiri, Konkani, Maithili, Marathi, Nepali, Oriya, Panjabi, Sanskrit, Sindhi and Urdu.

Second largest number of speakers belongs to the Dravidian family in which the main languages are Kannada, Malayalam, Tamil and Telugu. These languages are spoken in the southern states of India respectively in Karnataka, Kerala, Tamil Nadu and Andhra Pradesh. Dravidian languages are supposed to be very old and native to India, spoken even in the 4th millennium BCE. After thousand years they were separated into various branches, such as Konkani, Tamil, Telugu and others. Among all of them the history of Tamil language and literature is very old.

Most of the languages of north-eastern states come under the Tibeto-Burman family, except the Khasi languages spoken in the State of Meghalaya which belong to the Mon-Khmer sub-family of Austro Asiatic family. The Tibeto-Burman family of languages suggests that they have roots either in Tibet or in Burma. The term Tibeto-Burman was made popular by James Logon in 1850s while he was studying the languages of Southeast Asia. However, the present Northeast as a whole has considerable number of speakers of other language families including Indo-Aryan and Austro Asiatic. For example, Assamese is considered as an Indo-Aryan language, and Khasi and Jaintia languages spoken in Meghalaya are Austro Asiatic. The other native languages which differ from one another and spoken in the states of Assam,

Meghalaya, Nagaland, Mizoram and Arunachal Pradesh are grouped in some branches or the others of the Tibet-Burman languages. The Ahom language is one of the major languages of Assam which is placed in the Tai family of Southeast India. The Nicobarese language of Andaman and Nicobar Island is also a language of the Austro Asiatic family. Besides them there are hundreds of dialects which are also spoken in scattered areas. In the historical, cultural and philosophical development of India all languages had key role to play. They mingled with one another, adopted vocabularies of one another and thus a mixed culture was founded in India on the linguistic basis.

2.2.1 Sanskrit

Sanskrit is one of the oldest languages of India. It was first used in the Vedas and other Vedic texts in 2nd millennium BCE. In the beginning, as believed, Vedas were composed orally. Their written form appeared much later. Since then, Sanskrit is being used in India uninterruptedly, mostly in observance of Vedic rituals. It was considered as the Deva Vani that is the voice of the God by the Vedic people.

The literal meaning of Sanskrit is ‘that which is perfect, well prepared and sacred.’ Probably the term was first used in the Valmiki *Ramayana*. The origin and development of Sanskrit as a language has taken place in three stages. First stage the Vedic Sanskrit (1500 BCE to 500 BCE) when Sanskrit was in its earliest form, and all the Vedic texts, the four Veda, the Brahmanas, Aranyaka, and some of the early Upanishads were written. The second stage of its development took place in the middle of first century BCE. At that time a Sanskrit grammar was written by Panini (c. 500 BCE). It was known as Ashtadhyayi. It was the first complete grammar book of Sanskrit. Panini is also regarded as the Father of Linguistics. Before him Patanjali (author of Mahabhashya), Katyayana and other ancient scholars had also written books on Sanskrit grammar but they were incomplete. Panini had standardised it with set rules of words and composition. His Ashtadhyayi has been highly praised by scholars of languages and it has been called as ‘the wonder of intellectual world.’ Since then, a new age of Sanskrit writing started. It is known as the Age of Classical Sanskrit. The two epics, Ramayana and Mahabharata, and several other works including those of Kalidas were written in classical Sanskrit. The Classical Sanskrit made rich the Sanskrit literature.

During the period of Sunga, Satvahana, and Gupta dynasties Sanskrit was enjoying status of state language and patronage. Most of the popular works in Sanskrit

were written during this period, for example, Buddhacharita of Ashvaghosa, Mrichchhkatikam of Sudraka, Kama Sutra of Vatsyayana, Kiratarjuniyam of Bharavi, Mudra Rakshasa of Vishakhadatta, Narada Smriti, Brihaspati Smriti, and works of Kalidas. Sanskrit had connected the whole subcontinent in a common cultural bonding and had brought scholars of the whole region together. As has been mentioned in the previous unit, Sanskrit did not remain the language of Hindu texts alone. In the later period, Buddhist and Jain texts were also composed largely in Sanskrit.

But Sanskrit could not develop as the language of common men. It predominantly remained as language of the intellectuals. Its decline began to take place since the invasions on India by the Turkish, Afghan, and Mughal riders, and subsequently after the foundation of their rules in India. Western scholars, too, have commented that Sanskrit declined from the first millennium BCE and had become a dead language, as other languages such as Pali and Prakrit. However, their allegations have been challenged by many. Moriz Winternitz, a Sanskrit scholar and a former associate of Max Muller, is of the opinion that ‘Sanskrit was never a dead language and it is still alive.’ In fact, Sanskrit has been in use in all Hindu’s religious activities which kept it alive since thousands of years. Sanskrit continued to flourish in all generations, and new texts continued to be written. So, Robert Goldman and Sally Sutherland have written that “Sanskrit is neither dead nor living in the conventional sense. It is a special, timeless language that lives in the numerous manuscripts, daily chants, and ceremonial recitations.” Even today, hundreds of universities all over the world have Sanskrit in their language course. Most particularly, the Indologists (means scholars who study Indian languages and culture) are very fond of learning it. During the British rule, there was a deep interest among Indologists to study Sanskrit. This task was started with the foundation of the Asiatic Society by William Jones in 1784 at Calcutta. Thereafter the search for handwritten Sanskrit manuscripts began. Sir William Jones and Lady Jones got published first time the list of ancient Indian texts in 1807 from the Royal Asiatic Society in England. It speeded up study of oriental languages and culture, and several translations of Sanskrit books were brought out. Some of great works and such translations were done by, for example, Henry Thomas Colebrook (translated ‘Digest of Hindu Laws’, and wrote Sanskrit Grammar), Charles Wilkins (translated Bhagavat Gita into English), Colonel Colin Mackenzie (collected thousands of manuscripts), Horace Hayman Wilson (translated

Rig Veda, and Kalidas's Meghadutam into English, also brought translation of the Vishnu Purana), James Princep (deciphered Brahmi and Kharosthi scripts of ancient India), Sir Monier-Williams (translated Kalidas's Shakuntalam and other Sanskrit works, and prepared A Sanskrit-English Dictionary), Friedrich Max Muller (a German, translated Hitopadesh in German, brought out as editor a multi-volume book The Sacred Book of the East), and by many other Indologists. Thus, a new era of Sanskrit learning started in modern times which unearthed several new concepts and realities on Indian culture and civilization.

2.2.2 Prakrit

Prakrit is the name given to the group of ancient Indian languages of Indo-Aryan family that originated from the Sanskrit. Grammarians like Hemachandra, Dhanik, Markandeya and many others have written that the source language of Prakrit is Sanskrit. They were actually vernacular dialects spoken by the natives. Some of the Prakrit languages are Pali, Sauraseni, Magadhi or Ardhamagadhi, Maharashtri and Gandhari. They were in use in different parts of India between 3rd century BCE and 8th century CE. However, modern philologist Monier-Williams suggests its derivation from the work 'prakriti' which means "original, natural, normal." In this sense it can be said that it was existing much earlier than the primary source. But one fact is clear that Prakrit term was merged with the region in which it was spoken, such as in Magadh, Gandhara, and Maharashtra or in Sri Lanka. Thus, references can be made of some of the literature in Prakrit, for example, the inscriptions of Ashoka at Girnar, Sopara, Shahabazgarhi, Dhauri, and Jaugada; Gatha Satsai (love-poems) of Hala composed in Maharashtri Prakrit; Hari-Vijaya of Sarvasena; Lilavati of Kautuhala. Several scholars have suggested that Prakrit was spoken mostly by the people of lower strata. They give example of the play of Kalida's *Shakuntala* in which he uses two languages, Sanskrit for the upper-class speaker, and Prakrit for the lower class. But in fact, Prakrit might have been the *lingua franca* during those periods.

2.2.3 Pali

As has been mentioned above Pali was one of the Prakrit languages which was treated as sacred a language as the Sanskrit since it was mostly used in the Buddhist literature. Its main centre was the Magadha region of ancient Bihar. Because of this it was also called as Magahi. Theravada Buddhist literature also mentions Pali language as Magadhi. Buddha preached in the vernacular languages most particularly in the Magdhi Prakrit that was actually Pali. The whole of Tripitak or the Buddhist

canonical texts were compiled in Pali. It also shows that the Pali had acquired a privileged position during the Mauryan period. Emperor Ashoka's edicts were also written in the Pali language. Not only in South Asia (India, Sri Lanka) but in Southeast Asian countries, too, Pali inscriptions have been found in large number which reveals its prevalence in the whole region.

The meaning of Pali is 'a line or row' but it is also taken in the meaning of 'series of books.' Its origin and development took place from the dialects prevalent in the region at that time. It was also written in the Brahmi script. Later on, several other scripts were also used to write in Pali language, such as the Sinhala, Khmer, Burmese, Thai, Mon Script and even Devanagari.

Similar to Pali language was the Ardhamagadhi ,menas half-Magadhi, which was spoken in Bihar and eastern Uttar Pradesh. It has also been in wide use in the Buddhist and Jain literature most particularly in dramas. Jain canonical texts, Jain Agamas, were written in Ardhamagadhi.

One another form of Prakrit was the Shauraseni Prakrit spoken chiefly in ancient Saurasena (present day Mathura region in U.P) during 2nd century BCE. It was a vernacular language and was closely related to classical Sanskrit. It largely influenced the development of Hindi in later period.

The term Apabhramsa is also used for a number of dialects spoken between 6th and 13th century CE. Its literal meaning is 'corrupt' or 'non-grammatical languages'. Later on, a number of modern Indian languages evolved from Apabhramsa. Amir Khusro and Kabir who wrote in the early form of Hindi supposed to have written actually in Apabhramsa.

2.2.4 Script

Script is the medium in which a language is written. In absence of a script, it is very difficult to express the full meaning of a language. We have come to know that in the beginning most of the societies did not have any script. They communicated orally. But they could not store their knowledge for future generations. With the coming of script this problem was solved. Now they could store their knowledge, and they could develop their thoughts as well. As has been mentioned earlier, in the beginning Sanskrit, too, has no written form. It was preserved and its knowledge was transmitted orally. It is not sure when was Sanskrit first written down in a script form. Panini, the author of Ashtadhyayi, mentions about *lipi*, which is a Sanskrit word for script, but which *lipi*, it was not known. According to a Buddhist tradition, there were

sixty-four lipior scripts at that time among which the Brahmi script was the most prevalent one. Another popular script was the Kharosthi script. In these two scripts most of the early Hindu, Buddhist and Jain literature were written.

2.2.4.1 The Brahmi

Brahmi script was one of the earliest scripts of India which fully developed in 3rd century BCE. But it was already in use in the 6th century BCE. This fact is confirmed on the basis of a Mahayana Buddhist text Lalitvistara Sutra which mentions about several scripts prevalent at that time. It is also learnt that Buddha in his childhood knew many of them including the Brahmi. The Jain text also mentions about eighteen scripts out of which the Brahmi was the first one. In this system of writing vowels and consonants symbols are associated together.

The Brahmi script was most popular in the sense that it was used in the whole South Asia with variations. Even Asoka also used Brahmi script for Prakrit language in his inscriptions. It was written from left to right. Its origin is disputed as two types of opinions are there, one supporting its origin in Semitic culture, whereas the other view supports its indigenous origin. It has several variations in India, such as the Ashokan Brahmi or the earliest Brahmi, the Kushana Brahmi or the middle Brahmi, and the Gupta Brahmi or the Gupta script, each suggesting their uses in a particular period of time. The late Brahmi script of the Gupta period evolved into the Nagari script which in turn took the form of Devanagari script in which most of the modern Indian languages are written. The Sharada script, which was prevalent in the north-western part between 8th and 12th century, was also evolved from the late Brahmi. James Prinsep, an Orientalist scholar and founder of the Journal of Asiatic Society of Bengal is credited with the decipherment of Brahmi and Kharosthi scripts in which Ashokan edicts were written.

So, the earliest scripts for writing Prakrit and Sanskrit languages had been the Brahmi script, and later on its other variations, such as Nagari, Devanagari, Gujarati, Bangla, Odia and also the Dravidian scripts. Not only in texts but also in inscriptions it was frequently used since the 1st century BCE. A few examples of Sanskrit inscriptions are Maghera Wall Stone Inscription (Mathura), Ayodhya Inscription of Dhana, Nasik Inscription of Ushavadata, and Junagardh Rock Inscription of Rudradaman I.

2.2.4.2 Kharoshthi Script

This script was popular in the ancient Gandhara region (Northwest Pakistan, in the Peshawar) and used also in Bactria in Central Asia by the Saka, Scythian, Kushanas, and Tartars. It was mostly written from right to left. It was in use between 3rd BCE and 3rd CE. Philologists are of opinion that Kharoshthi script developed from the Aramaic alphabets of the *Ara* means who themselves had derived it from the Phoenicians. It came to the Northwest frontier after the conquest of Cyrus the Great (535 BCE), the Persian ruler, and the foundation of the Achaemenid empire. The Gandharan Buddhist Texts discovered from Hadda in Eastern Afghanistan were the earliest Buddhist texts written in Kharoshthi script. Ashoka's Major Rock Edict found at the places at Mansehra and Shahbazgarhi in Khyber region of present Pakistan are also written in Kharoshthi script. It shows its prevalence in the north-western region during that period. However, by the 2nd and 3rd century CE the Kharoshthi script was becoming out of use and its place was taken by the Brahmi script. The Indo-Greek ruler of north western region, Menander (155-130 BCE), who had adopted the Buddhist faith and new name Milind, had also issued his bilingual coins having both the Greek and the Kharoshthi scripts.

Kharoshthi script was overshadowed by the Brahmi by the 3rd century CE, as it is said that it died in its own place of birth.

2.2.4.3 Sharada script

It was one another type of script of the Brahmic family which was also prevalent in the north western region, mainly in Kashmir, during the 8th and 12th century CE. It was used in writing the Sanskrit and Kashmiri languages. It was named after the Hindu Goddess of Learning, Sarasvati who is also known as Sharada.

2.2.4.4 Titalari script

It was an important script of south India in which the Dravidian languages such as Tulu (spoken in some parts of Karnataka and Kerala) and Kannada, and also Sanskrit was written. Sometimes it is also called as the Tulu script or lipi in the region of Tulu speakers. It was a form of southern Brahmic script. It evolved from the Grantha script (7th -14th century CE) which was in use in Tamil Nadu and Kerala to write Sanskrit and Dravidian languages. It is very similar to Malayalam. A number of temple inscriptions of Karnataka and Kerala from 12th to 15th century have been found written in Titalari and Tulu scripts. Several Sanskrit texts such as Vedas, Upanishads, and Puranas are also available in these scripts. In this sense it remained as the script of sacred books. The 17th century Tulu epics known as Sri Bhagavato and Kaveri; Devi

Mahatmyam (15th century), Mahabharato (15th century) and Kaushika Ramayana (16th century) are good examples of medieval classics.

2.3 Salient features of Indian Art and Culture

Indian had a rich tradition of art and architecture since ancient times which are reflected in different art forms such as paintings, architecture, sculpture, music, songs and dance. In fact, they are integral parts of cultural life of a social group. It is concerned with beauty of life reflecting inner feelings of an individual or a group of people.

We all have known that India is a multicultural country. Here cultural traditions of a number of social groups mingled with one another and thus a common Indian culture was born. By living together in close relationship and sharing one another's ideas Indian people developed endurance to one another. They learnt to live life of peaceful co-existence. This is the reason that Indian culture is so strong and it is continuing with little interruption since ancient time. We have today world's all religions in our country; people here speak numerous types of languages; they follow different traditions and social values. They are culturally different but, they live peacefully amidst such diversity. This unity in diversity is one of the startling features of India culture. The cultural traditions of Indian people are best represented in their art forms.

Here, we shall study about some aspects of ancient Indian art such as paintings, architecture and sculpture.

2.3.1 Rock and Cave Paintings

Painting is such an art work which is as ancient as human civilizations. The earliest examples of paintings have been found from the sites of cave-dwellers. It shows that the people of all ages have aesthetic sense. They spent their leisure time in creative works.

Rock Paintings: Traces of Ancient Indian painting can be seen in prehistoric age, about ten thousand years back. The earliest example of Indian painting has been discovered from Bhimbetka, a place near Bhopal in the Raisen district of Madhya Pradesh. The whole site is situated in ten kilometres range having 750 caves which were once shelters of the people of Palaeolithic and Mesolithic periods. It was discovered by an Indian archaeologist Vishnu Shridhar Wakankar in 1957. Out of 750 rock shelters, 500 have paintings inside the wall. The paintings are in the natural red and white pigments made of essence of flowers and leaves. The main subjects of their

paintings are hunting, drinking, dancing, child-birth, and burials which are all related to their activities at that period of time. They also reveal about one of the earliest human settlements in India, and are compared with Aboriginal Rock Art of Australia and Lascaux Cave Paintings of France, both of which are as ancient as the Bhimbetka. One of the main attractions of Bhimbetka is an auditorium like cave which was the largest rock shelter.

The rock paintings of Bhimbetka depict the pictures of animals like bison, tigers, rhinoceros; and hunting weapons like barbed spears, pointed sticks, bows and arrows. Similarly, some of the paintings depict scenes of wars, and community life activities of hunter and gatherer periods. The mode of paintings belongs to petroglyph in which 'an image is created by removing a part of rock surface by incising, picking, carving, abrading' and then filling it with natural pigments. The name Bhimbetka is mythologically associated with Bhima, one of the Pandavas of Mahabharata who rested there during his period of exile.

Cave Paintings: Some more advanced type of cave paintings can be seen from 2nd century BCE, from the Satavahana dynasty to the Gupta dynasty, at more than twenty locations. They are made in pattern of murals. In this type of paintings first a wall, ceiling or a permanent surface is selected for the purpose and then fresco paintings are done over them. So, its canvass is very large. The best examples of cave paintings can be seen in the caves of Ajanta, Bagh, Sittanavasal, Armamalai, and Kailasanath temple in Ellora caves. Let us see them one by one.

2.3.1.1 The Ajanta caves painting

The Ajanta caves, dating between 2nd century BCE and 5th century CE are situated in Aurangabad district of Maharashtra. There are thirty-six caves which have some most beautiful paintings of all times. These paintings are mostly belonging to the Buddhist tradition since they depict Buddha's previous births and rebirths and tales from Jataka. These caves are combined master-piece examples of architecture, sculpture and painting. In this project, first rocks were cut in the Deccan plateau and then with extreme delicacy the pillars, roofs, walls and idols were carved out inside the caves. Next, they were decorated with paintings. The whole art work in those caves were commissioned and patronised by the then ruling dynasties and the Buddhist patrons. It reached maturity during the Satavahana period and to the climax during the Gupta period.

The technique and style in these cave paintings suggests that there must have been a group of artists who were regularly being trained for the purpose. The artists had mastery over their work. Here the fresco technique was used in the paintings. They used very vast canvases rather than a shorter one to depict scenes on the walls and ceilings. Thus, large scenes are spreading in all directions, and projecting a full life history or a full story of the subjects. Cave ceilings have also been decorated with elegant style and motifs. Walter Spink, an American art historian who tirelessly studied Buddhist art in India has prepared a multi-volume book on Ajanta art named as 'Ajanta, History and Development.' He brought out the chronology of the Ajanta caves according to their creations. He writes that some of the early caves (100 BCE-100CE) had been abandoned and it was during the period of Harisena, the ruler of Vakataka Dynasty in fifth century CE that some of them were revived or new caves were carved out. Harisena was a great patron of artists who further developed Ajanta art. An important feature of Ajanta art was that in the later period it pictured both Hindu and Buddhist gods in the same manner. Some of the best paintings can be seen in the caves numbering 1, 2, 9, 10, 11, 16, 17, 19, and 22.

2.3.1.2 Bagh Cave Paintings

Rock cut monuments at Bagh town of Dhar district of Madhya Pradesh have several mural paintings of the Buddhist period from 5th to 7th century CE. They are popularly known as the Bagh cave paintings. Here paintings, similar to Ajanta caves, have been done on the walls and ceilings of Viharas. Before painting, the walls were plastered in thick brown mud, over which lime-priming was done. This technique is known as the tempera technique. Of its nine caves the cave number 4 has the best paintings. It is known as the Rang Mahal, i.e. Palace of Colours. Subject matters of paintings are from Buddhist mythology.

2.3.1.3 Sittanavasal cave paintings

Situated in present Tamil Nadu, it is a rock cut cave with monastery which is credited to the Jain tradition. It was built between 2nd century BCE and 9th Century CE. However, fresco paintings made on the walls and ceilings are from 7th CE, during the Pandya, Pallava and Chola periods. The artist here adopted the same technique similar to the Ajanta painting. In fact, the Ajanta art influenced all other art forms in India. Here paintings are done on wet surface of lime plaster with natural pigments extracted from plants and minerals. The most beautiful of all paintings is the Lotus Tank on the ceilings which depicts a tank with lotus flowers. It is surrounded by the

devotees, elephants, fishes, and the Pandyan king and queen who have been seen offering great regards to the maker of painting, Gautama. The theme represents Jain tradition and suggests growing popularity of Jainism in the south India.

2.3.1.4 Armamalai Cave painting

Situated in the Vellore district of Tamil Nadu this cave painting on the wall is dedicated to Jain tradition. It is a Jain temple belonging to 8th Century CE. Here mural paintings have been done on the walls of the cave.

2.3.1.5 Ellora Cave paintings

Situated in the Aurangabad district of Maharashtra the Ellora Caves have been dated from 600CE to 1000CE. The temples here belong to Hindu, Buddhist and Jain traditions. Combinedly, they are marvels of architecture, sculpture and paintings at one time. However, paintings in the Kailash Temple are only in best condition. They were made over in several centuries. The painting of Vishnu and Lakshmi is the most famous one.

2.3.2 Architecture

In this section we shall learn about different types of architecture of ancient India. Ancient Indian architecture can be divided into various sub-sections, for example, pre-Mauryan architecture, the Mauryan architecture, Buddhist architecture, post-Mauryan architecture, and the Dravidian or south Indian architecture.

2.3.2.1 Pre-Mauryan Architecture

In the pre-Mauryan period we have literary references of architectural styles as mentioned in the Vedic literature and Epics. However, long back during the Indus civilisation we find material remains of Indus architecture at a number of places. The Indus civilisation represents a grand urban phase of civilization roughly dating from 2600 BCE. It is best remembered for its cities and town planning. Some of the urbanised centres of this civilization were at Mohenjo-Daro, Harappa, Chanhudaro, Banwali, Kalibangan and Lothal. The Great Bath at Mohenjo-Daro is a fine example of brickwork. It is a tank measuring 11.88 metres in length and 7.01 metres in breadth, with steps leading to surface on two sides. It is completely made of burnt bricks, including the floor. Water was supplied to the bath from a well, dug in an adjoining room. A similar bath is at Dholavira.

The Indus architectural style is simple, but it looks modern in planning. The cities were made in planned manner with amenities like proper arrangement of streets and sanitation facilities. A very important feature of town planning is its uniformity of

construction which is almost the same at all towns. This uniformity can be seen in use of burnt and dried bricks of standard sizes, a citadel, large complexes like Great Bath, granaries, elaborate drainage system, and lower cities surrounding the citadel. The architectural design does not find any resemblance elsewhere in later sites so it can be said that it was a peculiar Indus architecture style. The Indus people had great knowledge of building materials and engineering. They used lime and gypsum mortar for cementing, and bitumen for waterproofing.

The second phase of urbanisation starts roughly in 1025 BCE in the pre-Mauryan period. Discovery of a stone architecture from Kaushambi (near Prayagraj on the confluence of Ganga and Yamuna) reveals the concentration of an urban culture in the region. It is a palace like structure with several rooms and hall made of brick and stones and lime mortar. It was built in many phases since 8th Century BCE.

2.3.2.2 The Mauryan Architecture

From the Mauryan period we find monuments of very high quality in large number and at many places. Centre of political power under the Magadh kingdom shifted to the eastern region, Pataliputra being the capital of the Mauryan kings. It was first centralised government under which all round development took place. Likewise, the Mauryan kings also devoted their interest in the art and architecture. The Mauryan architecture was mostly patronised, and individualistic in nature. It set examples for the next generations.

The Mauryan architecture is represented in various types such as stone pillars, viharas, chaityas, stupas, temples, caves, and palaces.

During the rule of Ashoka, the use of stone in architecture increased to a great extent. The influence of Buddhism can also be seen on architecture of different types such as pillars, stupas, caves, palaces and terracotta objects. Coomaraswamy, a popular art historian, has divided the Mauryan art in two parts, the court art and popular art. The court art was the work of high technical skill of stone cutting and polishing, whereas popular art was the work of local sculptors.

The Mauryan king Ashoka is best remembered for his numerous royal decrees. He got erected stone pillars with messages inscribed on them at strategic locations of his empire. Engineering skills of the period can be proved by considering weights and sizes of those pillars. Each pillar weighs about 50 tons and it is about 50 feet high. They are made of red and white sandstone (of the Mathura region) and others of buff-coloured (near Banaras). The middle portions of pillars are highly polished. Pillars

have three parts- the base, middle, and the capital part. The capital part of the pillars has some animal figures such as lion or elephant, or the dharmachakra and inverted lotus. The Sarnath pillar inscription is the best example of Mauryan architecture. Its capital has figures of four lions standing back-to-back. It shows the artistic marvel of the period. The figure has been adopted as the national emblem of independent India.

The Stupas are other examples of Mauryan architecture. Stupa is a dome-like structure made of brick or stone. It was built to keep in its inside relics of the Buddha or great monks. Ashoka got constructed about eighty-four thousand stupas all over India and Afghanistan. Among them, the Sanchi stupa (near Bhopal) is massive. Its diameter is 121.5 feet and height 77.5 feet.

One of the main features of the Mauryan architecture is rock-cut architecture. The best examples rock-cut architecture of this period can be seen in the Barabar hills near Bodh Gaya. Here two caves namely Sudama and Lomas Rishi caves were donated by Ashoka to the monks of Ajivika sect, one of the various heterodox sects of that period.

Pataliputra, the capital city of the Mauryan kings had a magnificent palace. It has been mentioned by the contemporary Greek writer Megasthenese who was the Greek ambassador in the court of Chandragupta Maurya. He had written extensively about the Mauryan state and society in his book known as Indica. About the palace of Pataliputra mention can also be found in the travel account of Fahien (4th Century CE), a Chinese Buddhist monk who visited India at the time of the Gupta king Chandragupta II. But physical presence of this palace is not available, barring a few ruins.

Buddhist Architecture: With the coming of Buddhism a new era of Indian architecture started. The main Buddhist architecture were viharas, stupas and chaityas which were made according to the requirements of Buddhist organisation and practices. They were built under the patronage of followers of Buddhism, wealthy merchants, guilds and royal donations.

Buddhist Viharas: Viharas or monasteries are the dwelling places for Buddhist or Jain wandering monks. A vihara is normally a hall-like structure with small cells connected to it. The Buddhist and Jain literature often mention about their teachers and followers living and meditating in caves. So, caves were the earliest shelters for them. Even the first Buddhist council was also held in a cave near Rajgir in Bihar. However, the earliest vihara like structures were made during the Mauryan period. As

has been mentioned earlier, Ashoka had donated a cave vihara to Ajivikas. Since then, need for making shelter place was being felt which came in the form of viharas. They were built and supported by village revenue, the reference of which is found in the Karle inscription of 1st century CE. Karle, near Lonavala in Maharashtra, is known for cave architecture. It has 22 inscriptions which give information on donors of the individual structures.

In the beginning viharas were carved out in the rocks of mountains. Several such rock-cut caves, as in the Bhaja Caves (near Pune), the Karla Caves (Lonavala, Maharashtra), and the Ajanta Caves, dating back to 3rd century BCE had a number of viharas. They are the earliest viharas. Later on, cave viharas were also excavated in the Ellora and Kanheri caves. They were constructed as a rectangular hall like structure with rock-cut cells having platforms for beds and pillows. Often a vihara has one or more entrances and a veranda that is an outer porch with a roof. They are decorated with images and paintings. As the popularity of Buddhism was growing the need for new viharas were felt for various purposes. The viharas also became centres of higher learning. Many viharas were constructed during the Pala period in Nalanda, Vikramshila, Somapura, Odantpuri, and Jagaddla which served also as the centres of education. The Tibetan sources refer to them as five great mahaviharas.

Stupas: In Buddhism, stupa has a special place. It is considered as a sacred place of the Buddhist. It is a mound like or hemispherical structure for storing relics of Buddha or Buddhist monks. According to the Buddhist tradition, after Buddha's parinirvana his body was cremated and ashes were buried under eight mounds which became the earliest stupas. Those stupas were at Rajagriha, Vaishali, Kapilvastu, Allakappa, Ramagrama, Pava, Kushinagar, and Vethapida. Piprahwa stupa in Siddharthnagar district in U.P. is perhaps the oldest stupa which was discovered in 1898 by William Claxton Peppe, a British engineer.

The construction of stupas, rather Buddhist structure, got a boost with the adoption of Buddhism by the Mauryan emperor Ashoka. He is credited with construction of 84,000 stupas all over India which extended up to the North West Frontier. Some other stupas, such as at Sanchi (near Bhopal), Bharhut (near Satna, M.P), Amravati (Guntur, Andhra Pradesh), Dharmarajika (Taxila or Takshashila, Gandhara) are also very old. The Great Stupa of Sanchi was made of bricks. Its construction started during the Mauryan period. Construction of many other stupas continued at Sanchi even for many centuries under the Shunga, the Satvahana and the

Gupta. The central part of stupa, the hemispherical part, is surrounded by a stone railing and a Toran or gateway. Similar arrangement is there at Bharhut stupa, built during the Shunga period. Alexander Cunningham excavated the Bharhut stupa in 1874. He was a British Army engineer who was appointed as archaeological surveyor in 1861. Construction of Amravati stupa continued from 1st century BCE to 3rd century CE, and even in later period. Takshashila stupa was constructed under the patronage of Kushanas. This stupa was excavated by John Marshall in 1913. He was the Director-General of the Archaeological Survey of India from 1902 to 1928. His main contribution is in the excavations of Harappa and Mohenjo-Daro during this period. The stupa of Takshashila has a passage way for pradakshina (means, to move round the relic which was a traditional practice followed by devotees).

Chaityas: Chaitya is another form of Buddhist architecture. A chaitya refers to a prayer hall which is normally attached with a vihara. The earliest chaityas are found in the cave-viharas, but there are many free-standing chaityas, too. The Bhaja cave has a chaitya which is the oldest surviving one, constructed in 2nd century BCE. It is attached with a stupa. Its roof is propped with wooden like columns and walls are highly polished. Similar chaityas are also found in the cave monasteries of Ajanta, Karla and Ellora.

The hall like structure, similar to chaitya, known as mandapa, can also be seen in all Hindu temples. It can be due to the influence of Buddhist architecture.

2.3.2.3 Post-Mauryan Architecture

Although the trends started during the Mauryan period in architecture styles continued, some new experiments were also made in the later period. Rather, art and architecture flourished in the in the post-Mauryan period. They got some distinctive features, which have been described as schools of art, for example, the Gandhara School, the Mathura School, and Amravati School of art. Their contributions are mainly in the field of sculpture; however, they also influenced the architecture. A number of Buddhist monasteries, particularly of the Mahayana branch, built in the early centuries of the Common Era belong to the Gandhara School. They were influenced by the Greek style of architecture. For example, the monasteries at Takshashila, Mohra, Marada and Jaulian of the Gandhara region were influenced by the Greek art forms. Here copy of the Corinthian capital and triangular pediments of Greek art can be seen in stupas. The Corinthian-style had slender fluted columns and elaborates capitals decorated with acanthus leaves (a decorative plant) and scrolls. It

was developed by Callimachus, a Greek sculptor in the Greek city of Corinth. In Indian architecture, often images of Buddha were placed on the structure. The Amaravati stupa represents the Amaravati School of art.

The Gupta Architecture: The Gupta period (4th -6th century CE) is known for all round development. Because of this reason this period is often known as the ‘Golden Age’ of ancient India. Two new forms of styles in art and architecture developed during the period, namely the Nagara style and the Dravida style. They could be seen in the rock-cut caves, temples and stupas. You have learnt about the rock-cut caves of Ajanta and Ellora previously. Their other examples are the Bagh caves and the Udaygiri caves (Odisha). Caves were shelters of Buddhist monks for meditation. Even Buddha is believed to have meditated in the Indrasala cave near Rajgir. Since then, the tradition followed. The Ajanta caves have a number of decorated monasteries along with big halls and surrounding cells for the monks. They are supported with strong pillars. Some of the caves have special features of architecture. For example, in the Cave number six there is a two-storey monastery. Cave number ten has a vast chaitya or prayer hall supported by a row of 39 octagonal pillars. They are extra-ordinary examples of Indian craftsmanship.

Monuments at Ellora caves belong to the Hindu, Buddhist and Jain traditions. The Hindu monuments were largely constructed during the Kalchuri and Rashtrakuta periods. Rameshwar temple, the Kailash temple, and Dashavatara temple are famous among Hindu temples at the site. The Kailash temple (Cave number sixteen), dedicated to Shiva, is remarkable. It is very massive and entirely carved out of a single rock. It has an entrance, an assembly hall, a multi-storeyed main temple surrounded by a number of shrines dedicated to various Hindu Gods and Goddesses, a spacious place for circumambulation, a garbhagriha (or sanctum sanctorum) wherein lies the linga-yoni, and a spire-shaped like mount Kailash. This pattern of temple construction has been followed in all other Hindu temples. Among the Buddhist caves at Ellora, the Vishvakarma cave (cave number ten), also known as the “Carpenter’s Cave” is notable one. Its rocks shine like wooden beams, and thus they give impression of being a wooden structure. Caves 30 to 34 are credited to the Jain monuments. Some of important Jain shrines here are the Chhota Kailash, the Indra Sabha, and the Jagannatha Sabha.

Hindu temples were constructed in different styles. In the north India the most popular style was the *Nagar style*, which followed a special pattern- there is a *garbh-*

griha where idol of main deity is placed, surrounded by corridor and hall, and a *shikhar* or tower over the *garbh-griha*. A few examples of Nagar style temples are Tigawa temple (5th century CE, M.P), Dashavatara temple at Deogarh, U.P (6th century CE), Nachna Hindu temples at Panna district, M.P (5th-6th century CE), Bhitargaon temple at Kanpur, U.P (5th century CE, the largest and oldest brick temple to survive since the Gupta period).

The Dravidian style: The Dravidian or South Indian style of temples has a large *gopuram*, means, a very big tower at the entrance; in the middle the *garbh-griha* and its towering roof known as *vimanam*, which is the tallest structure in the temple. Temples in this style were constructed during the dynasties of Satavahana, Chola, Chrea, Kakatiya, Reddis, Pandya, Pallava, Ganga, Kadamba, Rashtrkuta, Chalukya and Hoyasala. Among them, the Pallava and Chola rulers contributed the most for temple construction in South India. The group of monuments at Mamallapuram or Mahabalipuram in Tamil Nadu during 7th-8th century CE were built during the rule of the Pallava king Narasimha Varman I who was also known Mamalla or the great wrestler. This temple city has forty monuments of different types- the Rath or Chariot temples, Mandapa or Cave temples, Rock reliefs, free standing temples, and excavations. Each temple is dedicated to a Hindu deity belonging to Shaiva, Vaishnava or Shakti faith. More than hundreds of Hindu temples at Aihole were constructed under the patronage of the Badami Chalukya kings between 7th and 10th century CE. Some other examples of Dravidian temples are the Meenakshi temple at Madurai built by the Pandya ruler, Nataraja temple at Chidambaram and Brihadishvara temple at Tanjore both constructed by the Chola kings.

2.3.3 Sculpture

Sculpture is a special form of art in which an artist makes a solid object, for example a statue, pot, or seal, out of a material such as wood, clay, metal or stone, and he puts his idea in it. It is a very old art form all over the world. Sculpture of ancient India can be divided into three main categories, namely stone, metal and terracotta sculptures. Artistic objects of various kinds such as statues, pottery, inscriptions, jewellery, seals and sealings were crafted out of these materials. They can be further divided by the age wise and by the schools.

2.3.3.1 Pre-Mauryan Sculpture

In the pre-Mauryan period the best examples of sculpture can be seen from the discovery of material remains of the of Indus civilisation. The people of this

civilisation had a good taste for artistic designs. They made different types of statues, pots, seals, ornaments, and toys. Their pots are of various shapes, such as vessels, jar and bowl, which are either hand-made or made on potter wheels. They are painted in red and black colours and decorated with floral and arithmetic designs. Some of them have paintings of animal figures. Their sizes also differ from miniature pots to normal size pots. Terracotta images are not very artistic. However stone statues unearthed from Harappa and Mohenjo-Daro are realistic. The most popular of them is the bearded man made of soapstone. Sculptors also had the knowledge of high-class metal works. They made human and animal figures of bronze and copper. A small bronze statue of 'Dancing Girl' is much acclaimed image of the Indus civilization.

2.3.3.2 Mauryan Sculpture

The Mauryan art is best represented in their pillars and inscriptions. Ashoka had got erected hundreds of stone pillars at strategic locations through which he wanted to connect to his people. They are as huge as 50 feet in height and about 50 tons in weight. Stone pillars are made of either spotted red and white sandstone (as in Mathura) or of buff-coloured hard sandstone with black spots (as in Chunar near Banaras). Pillars have three parts- foundation, column and capital. The foundation part is under the ground to support the pillar. Column is the middle part which is round and highly polished. The capital, the apex part of pillar, has figures of an animal such as a lion or an elephant, the *dharmachakra*, and inverted lotus. A complete pillar is a high example of craftsmanship like cutting and chiselling the stone, its polishing and crafting of figures. Uniformity of styles in Ashokan pillars suggests that they were the work of craftsmen of a particular region. The best example of Ashokan pillar is the Sarnath pillar with figures of four lions back-to-back. It is known as the *Lion Capital of Ashoka* which has been adopted as national emblem of India. Some other pillars are at Vaishali, Lauria-Nandangarh, Lauria-Araraj, Allahabad (Prayagraj), and at various locations of Delhi.

Another feature of art form was Ashokan edicts which were inscribed on his pillars, boulders or on cave walls. Their purpose was to spread the message of *Dhamma*, the new social and religious policies which Ashoka had initiated in his empire. They have been categorised into major and minor rock and pillar edicts, mostly written in Brahmi and Kharoshthi scripts. There is an edict in Kandhara inscribed both in the Greek and Aramaic languages. Maski Minor Rock Edict (Raichur, Karnataka) is important in the sense that it has reference of

“*Devanampriya*” which was the title of Ashoka. In one another minor rock edict the title “*Devanampiya Piyadasi*” is mentioned. It helped in the identification of Ashoka while edicts were being deciphered. James Prinsep, a British scholar and orientalist is credited with deciphering the Brahmi and Kharoshthi scripts. Ashokan edicts have been found on several pillars such as Sarnath pillar, Kaushambi (Praygraj), Lauriya-Araraj, Lauriya Nandangarh, Rampurva and Delhi-Topara pillar.

2.3.3.3 Post-Mauryan Sculpture

In the post-Mauryan period art, particularly sculpture is identified on the basis of certain distinctive features which developed into schools. Thus, we find three distinct art forms such as the Gandhara School, the Mathura school and the Amravati school.

The Gandhara School: A certain type of art form flourished between 1st century BCE and 5th century CE in the Gandhara region of North West frontier, so it was named as the Gandhara School. Here the foreign influence on art is quite discernible as the region is on close proximity with Chinese, Iranian and Greco-Roman cultures. But the influence of Bactrian Greek is more dominant so it is also called as Indo-Greek art form. It was brought to India, in the north-west, by the Shaka and Kushana rulers, most particularly by Kanishka.

The influence of Mahayana Buddhism was very deep on the Gandhara art. The Mahayana Buddhism started worshipping Buddha as deity and so they evolved his images taking inspiration from the Greek sculptors. It also developed the concept of *Bodhisattava* which means ‘an enlightened being’. It can be achieved by anyone after deep meditation. The Mahayanists were in a large number in Gandhara, so they adopted Hellenistic art methods (means the Greek art form) and made images of Buddha and other divine figures.

Takshashila was one of the main centres of the Gandhara art. Here, images of Buddha and relief sculptures worked out on stone and terracotta have been found in large number. They were made according to the scenes described in the Buddhist texts, such as the life history and works of Buddha. They were executed in a life-like form on materials. Thus, a few main features of the Gandhara School of art can be outlined here-

1. There was Greco-Roman influence on art form of the Gandhara school in style and methods and some adaptations from Greek mythology.

2. Human figures, of Buddha and *Bidhisattvas*, and even of princes, were replicated on stones, stucco or terracotta with accuracy of physical details, such as bare chest, muscles, hairs style, eye-lids, and dressing.
3. Statues are highly ornamented and surrounded by deities and animals and flowers.

The Gandhara School of art also influenced, as it is believed, the art forms at other places such as at Sanchi and Bharhut. This is indicated by the use of Kharoshthi script in the Bharhut gateways. However, this similarity has been contested by scholars of art as they find native elements in north Indian art form more than the foreign elements.

The Mathura School

A special type of art form developed in the Mathura region of present U.P since the 2nd century BCE because of which it is known as the Mathura school of art. The materials such as spotted red sandstone, used in crafting statues in this art form were procured from Agra and Mathura. A very important aspect of this art form is that its influence was not restricted to Buddhism alone, but images of Buddhist, Hindu and Jain deities, and *Yakshas* (male nature deities), *Yakshinis*, and Nagas were also made by the sculptors. Though influence of the Gandhara School on Mathura art cannot be overlooked completely, it is considered as the true Indian art form, the examples of which are available from Bharhut, Sanchi and Gaya. This school of art spread to the whole of India and even still being followed in the statue making. It flourished during the Shunga, the Kushana and the Gupta periods.

A very important feature of the Mathura school is that in the statues of Buddha, both in sitting and standing positions, the mark of facial grace and spirituality are depicted along with physical masculinity and energy. He is seen in the Abhaya mudra position, right hand raised upright and palm facing outwards, which means granting fearlessness to the devotees. This position became a common feature in statues of deities of Buddhist, Hindu and Jain. Spiritual power of deity is reflected by creating a halo behind the faces of images. In this way Mathura sculptors were having inspirations from various traditions of Buddhism, Jainism and Brahmanism. Statues of Brahmanical gods and goddesses like Shiva, Vishnu, Parvati, Lakshmi, Brahma, Surya, Balaram, Kartikeya and many other deities are also found in large number made in this art form.

With the foundation of Kushana dynasty in the Mathura region this art took a new turn. The Kushanas promoted making of royal portraiture. Thus, we find monumental sculptures of Kushana rulers, particularly Vima Kadphises and Kanishka I in the ruins of Temple of Mat in Mathura. Mathura was the winter capital of the Kushans. In one headless standing statue of Kanishka he is seen in his royal attire, and with sword and mace. His name is inscribed in Brahmi script below. Apart from the Buddhist statues, the statues of Hindu deities such as Vishnu, Shiva, Surya, Shakti and Ganapati were also given their standard forms during this period. Under the Gupta dynasty the Mathura school flourished further. There was use of pink sandstone in the sculpture with more refined style. It is quite clear that the foreign influence was reducing.

The Amaravati School

This school of art was seen in the region between valleys of the Krishna and Godavari, the main centres being at Amaravati, Nagarjuna Konda and Jaggayapeta. Though its early form can be traced back from 2nd century BCE, it matured during the Satavahana period in 2nd and 3rd century CE. This form of art could not continue beyond 4th century.

The main feature of this school is the use of white marble. Its examples can be seen mostly in the great stupa of Amaravati where scenes from Buddha's life in the reliefs, and in free-standing Buddha's statues have been magnificently depicted. Apart from figures of religious nature, naturalistic and sensuous images of human figures, male and female, are also in abundance and in beautiful styles.

As has been mentioned previously, the cave monasteries and temples are also replete with works of sculpture. In the Ajanta caves, most particularly in cave number nineteen which is known for sculptures, several images of Buddha and other entities can be seen. Similarly, temples of south India are decorated with numerous images of Hindu gods and goddesses. They all are ample examples of high class works of India's sculptors.

Check Your Progress I

1. Name the main language family of India.
2. Name the two ancient Sanskrit grammar books.
3. Point out basic difference between Brahmi and Kharoshthi scripts.

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| <ol style="list-style-type: none">4. What do you mean by vihara, stupa, and chaitya?5. What are basic features of Gandhara School of art? |
|--|

2.4 Indian Educational System

Education is the core of human development and progress. It comprises of both formal and non-formal education. In the pre-historic society, everything was learnt from experiences. In the later period this pattern was formalised by foundation of educational institutions. Indian educational system is as old as Indian civilisation. Though we have no clear indication of educational pattern during the Indus Valley Civilisation, it can be assumed that there must have been an advanced system of education, considering the social-economic pattern of that period. During the Vedic period we get clear indication of a formal educational pattern. This pattern continued to dominate till very late period in Indian educational history.

2.4.1 Vedic Education

The Vedic literature gives descriptions of ancient education system. It was based on socio-economic pattern of that time. The Aryans were living in small settlements of different family groups along with their cattle which were their chief wealth. So, the ancient sages or rishis composed hymns in praise of gods like Varun, Indra, Agni and others to protect their cattle and to get victory in wars. In this way, education system started right from their requirements of welfare of kins and cattle. The Vedic hymns were required to be remembered and transferred from one generation to another. This task must have been done by a group of expert teachers and the knowledge seekers at schools of some sorts. Individual seeking secret knowledge and salvation used to live in forest for years which is learnt from their Brahmana, Upanishad and Aranyaka.

Ancient education system was based on the Vedic principle of Varnashrama. In the early Vedic period society was not strictly divided on the Varna system. Everyone, men and women, had equal right to get the Vedic knowledge. Among the composers of Vedic hymns there were several women, for example, Shachi, Gargi, Vishvavara, Apala, Ghosha, Surya, and Mamata, to name a few. Education was imparted on Guru-Shishya that is teacher-pupil, tradition. Every pupil was taught according to his ability. The first task of a pupil was to get by heart the sacred texts orally. They were taught to learn the pronunciation of Vedic Sanskrit. As has been mentioned previously, Vedanga used to serve this purpose very effectively.

Pattern of life changed very much in the later Vedic period. Agriculture became the main occupation and life was more settled. Society was divided into four Varnas, namely Brahmana, Kshatriya, Vaishya and Shudra. At the same time the Ashram system also came into existence in which life span of a man was divided into four stages- Brahmacharya, Grihastha, Vanaprastha, and Sanyas, and accordingly the pattern of education was established. Brahmacharya was strictly related to the Aryan pupil in which he lived with a teacher, away from his home, for a certain period of time. During this period, he strictly followed rules of gurukul and orders of the teacher. After getting complete or partial knowledge of the Vedas he came back to home, got married and entered the second ashram, the Grihastha or household stage of life. As his age advanced, he became detached from worldly pleasure and started the life of Vanaprastha. In the last part of his life, means in sanyas ashram, he left home and spent his life as a wanderer and in meditation. In the four ashrama, the brahmacharya ashram was mainly concerned with getting education.

The Vedic education started with a ritual known as upanayanasanskaar or sacred thread ceremony, after which a son was handed over to a guru. This ritual was not acceptable for the fourth varna, i.e. shudra, and in this way this group of people remained away from formal Vedic education. Upanayana sanskaar or ritual was regarded as second birth of the child when he was sent to a teacher. So, the people of the three varnas were also known as dvij, means double-born. Life in the Brahmacharya stage was very rigid and austere. A pupil followed strict physical and spiritual discipline. Apart from study he had to do physical works like collection of fire-woods and going for alms. He spent a simple life dedicated to his teacher, and he was required to control his senses. He was not allowed to get married during this stage of life. His main subjects of study were mathematics, vyakarana or grammar, chhand means meter, and Vedas. Theoretically, the three dvijs had right to get education but practically it remained privilege of the Brahmana. When the guru was satisfied with the achievement of his pupil he gave him the last message, the snatakopadesh, of social and moral behaviours such as to speak truth, behave according to dharma, respect parents, teachers and elders, give alms, and observe ahimsa or non-violence. The Atharva Veda, Satpath Brahmana and Grihya Sutra, Dharma Sutra and Smritis give descriptions on Brahmacharya and teacher-pupil relations. It seems that teaching became a profession strictly for the Brahmana. In the later period varnashrama system also took a hereditary form and developed into the caste system.

2.4.2 Buddhist Education

The sixth century BCE in Indian history is known for first cultural and social revolution. During this period several heterodox sects emerged as reaction against the Vedic system. Among them, Jainism and Buddhism were most popular. This development also influenced educational system. Such sects had adopted different patterns of teaching according to their own principles and needs. They had rejected *varna* based social system and predominance of Brahmana in Vedic rituals. So, they opened way for all in their monasteries which served also as educational institutions. People belonging to all varnas and women were invited to join their sangha. According to Buddhist thought, anyone could be a teacher irrespective of *varna*. However, there were restrictions of entry in the sangha for persons like slave, debtor, officers of king, persons suffering from contagious diseases, thieves and robbers.

Buddhist institutions had adopted some formalities in its pattern of education. The first step for entry in Buddhism was 'prabajja'. It means leaving home by one desirous to enter Buddhism, and going along with a Buddhist monk. The new entrant was known as '*siddhaviharika*' who under the guidance of a spiritual teacher got a *bhikkhu* status. A guru was known as '*upajjaya* or *acharya*.' He taught sacred texts and religious and moral lessons to pupils. Brahmacharya is a pre-condition here, too. The pupil always kept himself at the service of his teacher. The Buddhist text *Milind Panho* of Menander (an Indo-Greek king) also describes about the duties of a pupil towards his teacher. However, *siddhaviharika* was free to comment on if his teacher was wrong at any place, but he (pupil) himself asked for punishment in case he committed any wrong. According to Buddhaghosha, a Buddhist scholar of 5th century CE, position of an *upajjaya* was higher than the *acharya*. This was the basic difference between the brahmachari of Brahmanical education and Buddhist education. In the former a pupil did not raise any objection over his teacher, whereas in Buddhist education healthy debate was allowed. A *siddhaviharika* normally remained in the service of sangha for his whole life. There was another category of follower who was known as '*upasaka*' or '*upasika*' who did not join sangha but supported his religion from outside. After getting education of Buddhist texts pupil had to pass examinations. They were taught in stages and by means of songs, debates and explaining the dhamma. Some were made expert in *Vinaya*, the rules, and some were trained to become preachers of dhamma.

2.4.3 Ancient Universities

There were a number of educational institutions, right from the lower level to upper level. Vedic schools or gurukul served this purpose in Vedic education, whereas Buddhist Viharas in the Buddhist. Many educational institutions of higher learning were established in some of the major towns of that time between 200 BCE and 800 CE. They can be compared with any modern university. Here we shall learn about some of them.

Taxila or Takshashila University

There was a big centre of learning at Taxila or Takshashila near Rawalpindi on the North West frontier in modern Pakistan. Takshashila was known for an urban life. It flourished in 5th century BCE as was proved by excavation done by Sir Alexander Cunningham, the first surveyor of Archaeological Survey of India, in mid-19th century and later on by Sir John Marshall in 1920s. However, the earliest settlements at Takshashila could be found as back as the Indus civilisation. References of Takshashila are there in several ancient texts such as in Panini's Ashtadhyayi, Mahabharata, Ramayana, and in Buddhist texts Jatakas and Dipavamsha. According to Jatakas Takshashila was the capital of Gandhara and a famous centre of learning.

A famous university was there at Takshashila where students came from far-off places from Indian sub- continent and Central Asia. The Jataka Tales mention that students from Kuru, Videha, Rajgriha, Kashi and Ujjayani came to Takshashila for higher learning. However, in comparison to ancient Nalanda university the infrastructure and administration of Takshashila were not so systematic and elaborate. Students were admitted, normally at sixteen, either as day scholars or as residential students on payment of fees. Courses of study were highly developed and diverse. Thus, pupils were taught the Vedas, apart from a number of vocational and technical courses. Mode of education was predominantly Sanskrit. There is mention of eighteen types of *Shilpa* or Arts from which a pupil had to select anyone. A few of them were elephant lore (gajavidya), archery (dhanurvedya), tantric and hymns, hunting etc. There were schools for advanced study of medicine, law and military science. Medical education at Takshashila was very advance. There is reference of a physician named Jivaka in Buddhist texts who was trained in Ayurveda and had gained such a deep knowledge of herbal medicine and surgery as he was appointed *rajvaidya* (court physician) by Magadha king Bimbisara. Some other most popular alumni of Taxila University were Kautilya (or Chanakya, the author of *Arthashastra*), Charaka (famous

Ayurveda teacher and author of *Charaksamhita*), Panini (Sanskrit grammarian and author of *Ashtadhyayi*), and Prasenjita (king of Koshal).

A fixed number of students were assigned to a teacher who administered strict discipline over them. No fees were charged from poor students. There were two groups of students, paying and non-paying. The paying students were the children of royal houses. They were taught in day time, whereas the non-paying students were taught in night. Financial supports to university generally came from wealthy parents and merchants. There was tradition of *gurudakshina* or thanks giving to teacher as a mark of respect by student after completion of study in the form of simple things such as an umbrella, a pair of sandals, or a turban. Method of teaching-learning was critical and progressive. Convocation was held after the completion of courses in which no formal degree was given. Knowledge gained through rigorous processes was itself considered as the reward of a student.

In the later period, Takshashila became the chief centre of Buddhist education, mainly Mahayana Buddhism. This great institution of learning declined after the regular invasions of the Hunas in 5th century CE.

Nalanda University

A big centre of higher learning was established at a place known as Nalanda near Rajgir in Bihar in the 5th century CE by the Gupta king Kumaragupta. It has been mentioned as a Mahavihara, and so it was treated as a Buddhist university. Its further expansion continued from the Gupta period to the Pala period (8th century CE to 11th century CE). So, it had the privilege of getting royal patronages.

Nalanda was a famous historical place that was visited by both Gautam Buddha and Mahavira, and later on by several Chinese scholars such as Hiuen Tsang and I-Tsing. Hiuen Tsang had come to India in 630 CE and had stayed up to 643 CE out of which he had spent three years at Nalanda whereas I-Tsing was in India from 673 to 700 CE. I-Tsing had also spent ten years in Bihar. From the accounts of the two Chinese pilgrims it is learnt that at that time there were one thousand five hundred teachers and ten thousand pupils (*bhikshu*) in Nalanda. Students from China and South Asian countries were coming to Nalanda in large number. They were all accommodated in the huge residential complex of Nalanda consisting of temples, viharas and monasteries. I-Tsing mentions about eight viharas with three hundred cells in Nalanda. Huge expenditure that incurred on maintenance of Nalanda University, according to Chinese pilgrims, was donated from the revenue of hundreds

of nearby villages. I-Tsing also gives description of daily routine in the university, from early hours in the morning to evening. Water-bell rang at fixed time for set activities such as bathing, rituals, learning, and evening chanting. Students were taught in small classes through interactive method. All sorts of knowledge were given to them which included subjects on religion, both of Brahmanical and Buddhist, philosophy, science and arts. But more emphasis was given on the Vedas and related literature, logic, grammar, Ayurveda etc. After completion of the course convocation was held in which students were awarded with degrees according to their merit, and sometime on the basis of social position.

It was very difficult to get admission in the Nalanda University as the number of students coming from the whole country as well as from foreign countries was very vast. They were selected after minute observation and quality of students. Teachers tested the knowledge of students by conversation. Quality of teachers at Nalanda was very high. About one thousand of such teachers could explain collections of more than twenty sutras. At the time of visit of Hiuen Tsang the head of Nalanda University was Shilabhadra, a Buddhist monk, yogacharya and expert in philosophy. He had personally taught Hiuen Tsang. Before him Dharmapala of Kanchi, who was teacher of Shilabhadra, was the head. After Shilabhadra, Dharmakirti followed the chair.

A very important part of Nalanda University was its huge library. According to Tibetan sources the library was called as Dharmaganj which had three very big multi-storeyed buildings named as the Ratnasagara, the Ratnodadhi, and the Ratnaranjaka. The Ratnasagara building was the biggest. It was nine-storeyed which had collection of thousands of rare manuscripts. It was attacked by several invaders and finally destroyed by Bkhhtiyar Khilji, around 1200 CE.

Other Institutions

There were other educational institutions at that time in the country, among which the Vikramashila University situated in Bhagalpur district of Bihar, the Odantapuri University in the modern Bihar Sharif district of Bihar, the Vallabhi University in Gujarat, and Kanchi University were prominent. The Vikramashila was a Buddha vihara which was founded in 8-9th century CE by the Pala king Dharmapala. According to Tibetan sources it had about one hundred teachers and thousands of students. The most celebrated teacher of this institution was Atisha Dipankara who was key-figure in spread of the Mahayana and Vajrayan philosophy of Buddhism to Tibet and South Asian countries. The Vikramashila University was better organised in

respect of other institutions. Thus, there are references of several categories of in-charges from top to bottom such as adhyaksha, dvarapala, mahapandit, pandit, upadhyaya or acharya, andbhikshu. It was the main centre of study of Vajrayan philosophy of Buddhism in India. The Odantapuri mahavihara was founded by Gopala, who was also the founder of Pala dynasty, in 8th century. The Vallabhi University was also a centre of Buddhist and Brahmanical learning in North India during 7th and 12th century. Hiuen Tsang had also visited this institution. It was one of the main centres of Hinayana or Theravada Buddhism.

Education during Gupta Period

There was rapid progress of education during the Gupta period. Hindu temples, the Buddhist viharas, and monasteries of Jains and Shaivas were imparting education in towns and villages of India. In the Brahmanical institutions a student spent very long period ranging from twenty to thirty years. But in Buddhist institutions student life was shorter, normally for ten years. There were two types of education, theoretical and technical or vocational. Main emphasis in Brahmanical institutions was given on theoretical study of Vedas and Vedic literature along with grammar, the seekers of which were mostly Brahmins. They were trained for Brahminic rituals and sacrifices which were often organised and performed by the royal and wealthy classes. Technical and vocational educations were the requirements of business community who needed trained personnel for smooth conduction of business and accounting. Such types of personnel were trained in technical and vocational schools set up by the guilds, means associations of professional communities. The Buddhist institutions also restricted education to Buddhist learning and other associated subjects.

2.4.4 South Indian System

In the south India, during rule of the Pallavas (4th to 8th century), Jains and Buddhists were dominating in the educational institutions which were mostly centred in Kanchi between the Krishna and Godavari. At that time religious conflict between the Hindu and Buddhist communities was at climax, and the latter was in the declining position. This gave the chance to the rise of Hindu institutions. They were also getting big royal patronages. The Hindu centres of learning were known as ghatikas, which were mostly attached to temples and under the control of Brahmins. Later on, several mathas or Hindu monasteries were also established. Sanskrit was the medium of instruction, as it was also the official language in the Pallava kingdom.

More emphasis was given on learning Hindu scriptures, so their course structure was also shrinking. Kanchi, the capital of Pallava was the main centre of learning. Celebrated authors like Bharavi (author of Kiratarjuniya) and Dandin (author of Dashkumaracharita) lived in the Pallava court. Thus, temples were the main centres of learning, as is known from several inscriptions and royal grants. All arrangements for teachers and students were made in the temples. In the inscriptions found from Tiruvottiyur and Tiruyuvukul there are references of such institutions controlled by temples. During the rules of the Chola and Pandya kings (7th and 8th century) there was rise in the power and popularity of mathas. A large number of Hindu pilgrims also visited those mathas.

From the above descriptions it can be learnt that when most of the parts of the world were living in darkness, India was receiving the light of knowledge, and spreading it to the whole world. Thus, India's claim to become the Vishwa-guru was appropriate.

Check Your Progress II

What was relation of Varnashrama to Vedic education?

How was the Buddhist system of education?

Where was ancient Takshashila University situated? Who were famous students of this University?

What do you know about the library of ancient Nalanda University?

2.5 Let Us Sum Up

On the basis of the above details and discussions it can be said that India was one of the few nations in the world where quest for knowledge was intense. You have already seen in the first unit about Vedas and other ancient texts which are store-house of knowledge. The biggest contribution of our fore-fathers is that they not only acquired knowledge on all aspects of life and nature but they also preserved them for generations to come. For this, they developed scripts, and various art forms. Books and art and architecture themselves speak of a higher teaching-learning process. In no part of the world, in those days, such educational institutions were existing as were in India. In fact, it was a glorious past of India.

2.6 Key Terms

Indologist – One who studies Indian art and culture

Indo-European language- Languages of India and Europe which had common origin

Prakrit- Ancient languages spoken by original inhabitants of India

Brahmi script – One of the most ancient scripts of India in which several languages were written

Kharoshthi script – An ancient script prevalent in North-Western Frontier of India

Bodhisattava–One who is on the path to becoming Buddha

Vihara – Buddhist monastery

Chaitya – Prayer Hall

Stupa – A Buddhist sacred place where relics of Buddha or Buddhist monks kept

2.7 Questions and answers

2.7.1 Short-answer Questions

1. Write a short note on Pali language.
2. Write a short note on Brahmi script.
3. Discuss the main features of Ajanta cave paintings.
4. Write a short note on the Buddhist architecture.
5. Was there Greek influence over Gandhara school of art? Discuss.
6. Write a short note on the pattern of Vedic education.
7. How was the system of education in ancient Nalanda university? Discuss.

2.7.2 Long-Answer questions

1. Discuss the development of Sanskrit in ancient period in India.
2. Discuss the development and main features of Brahmi and Kharoshthi scripts.
 3. Write an essay on the development of paintings in ancient India.
 4. Discuss the development of architecture in ancient India.
5. Discuss the basic features, with examples, of the Gandhara, Mathura, and Amravati schools of sculpture.
 6. Discuss the development of education in ancient India.
 7. Write an essay on the ancient universities of India.
8. What do you mean by ethics in warfare? Discuss some of the rules of warfare in ancient India.

2.8 Further readings/suggested readings

1. A. MacDonell, A History of Sanskrit Literature
2. A. L. Basham, The Wonder That was India
3. A. S. Altekar, Education in Ancient India

4. M. Hiriyana, Sanskrit Studies
5. R. S. Sharma, India's Ancient Past
6. R. S. Tripathi, History of Ancient India
7. Romila Thapar, History of Early India
8. R. R. Dikshilar, War in Ancient India
9. R. Verma, Idea of Bharat

2.9 Answers to check your progress

Check Your Progress I – Answer 1. See 2.2; Answer 2. See 2.2.1; Answer 3. See 2.2.4.1 & 2.2.4.2; Answer 4. See 2.3.2.2 Buddhist Architecture; Answer 5. See 2.3.3.3.

Check Your Progress II- Answer 1. See 2.4.1; Answer 2. See 2.4.2; Answer 3. See 2.4.3; Answer 4. See 2.4.3.

Unit III

DHARMA, PHILOSOPHY AND VASUDHAIVA KUTUMBAKAM

Structure

- 3.0 Introduction
- 3.1 Objectives
- 3.2 Indian Perception of Dharma
 - 3.2.1 Meaning and Concept of Dharma
 - 3.2.2 Meaning and Concept of Darshan
 - 3.2.2.1 Indian Schools of Philosophy
 - 3.2.2.2 Main Features of Indian Philosophy
- 3.3 The Concept of Vasudhaiva Kutumbakam: Man, Family, Society and World
 - 3.3.1 Concept of Vasudhaiva Kutumbakam
 - 3.3.2 Significance of Vasudhaiva Kutumbakam
- 3.4 Polity and Governance
 - 3.4.1 Meaning of Polity in Ancient India
 - 3.4.2 Forms of Government
 - 3.4.2.1 Kingship
 - 3.4.2.2 Overlordship
 - 3.4.2.3 Republics
 - 3.4.3 Organs of State
 - 3.4.4 Sabha and Samiti
 - 3.4.5 History of Polity and Governance
- 3.5 Let Us Sum Up
- 3.6 Key Terms
- 3.7 Questions and Answers
 - 3.7.1 Short-Answer Questions
 - 3.7.2 Long-Answer Questions
- 3.8 Further Readings/Suggested Readings
- 3.9 Answers to Check Your Progress

3.0 Introduction

In the previous two units you have learnt about the key features of Indian literature, languages, and art and architecture. You have noticed that Indian literature

and art are based on certain ideologies of those periods. Those ideologies were integral part of Indian life and culture. In fact, they were the basic principles of Indian philosophy which are reflected in the way of life of Indians. In this unit you will learn about Indian perception of Dharma and Darshan. Their meanings and significance in Indian history and culture are special. Dharma in Indian concept is not equivalent to religion, rather it is a sense of duty. Different schools of Indian philosophy describe dharma in this particular way. Above all, the Indian concept of Vasudhaiva Kutumbakam is highest mark of Indian thought which sees the whole world as an integrated family. Further, since the earliest times, the Indians were able to develop a well-organised system of government. In this field they had experience of administration in all forms of polity, be it kingship, overlordship or republics. In all such systems, gram swarajya or self-rule of village communities was accepted in those days.

3.1 Objectives

After reading this unit you will be able to discuss and analyse –

- The meaning of dharma and darshan according to Indian point of view
- Indian concept of a peaceful living as enshrined in vasudhaiva kutumbakam
- Indian system of governments, and village self-rule

3.2 Indian perception of Dharma and Darshan

In this section you will learn about the meaning of dharma and darshan as explained according to Indian scriptures. They are related to ancient philosophy of India and moral duties as prescribed in ancient texts.

3.2.1 Meaning and Concept of Dharma

In popular uses today the meaning of dharma is taken in the sense of religion, means, a form of worship; but in ancient India the word dharma was not used in this sense. However, there is not an agreed definition of religion itself in the western world.

Dharma is a Sanskrit word, the root of which is the word *dhri*, means to hold or to support or to preserve. The earliest reference of dharma appears in the Purusha Sukta of Rig Veda (10th Mandal). Here it stands for a natural or cosmic law. It is further explained as *rit*, a Sanskrit word, the meaning of which is that everything in the universe is maintained by a natural law. There is no deviation in it. To make it clear, for example, planets move in a fixed order, season changes in a fixed order, sun rises and sets in a fixed time, etc. In the same way, the life of all creatures is

controlled by cosmic or natural laws. Later on, this cosmic principle was applied also for conduct of social and moral order.

Other ancient Indian texts also supported this view in regard to dharma. For example, in the Satapatha Brahman, dharma has been used in the meaning both of cosmic law, and as truth and righteousness. In the *Manu Smriti*, the ancient law book of India, Manu has also explained the meaning of Dharma. Manu outlines ten principles of dharma, which are actually moral principles for a social order. They are- Dhriti, means patience or perseverance; Kshama, means forgiveness; Dama, means control of passion; Asteya means non-stealing; Saucha means cleanliness of body, mind and soul; Indriyanigraha, means control of sense organs; Dhi, means cultivation of reasonableness; Vidya, means knowledge; Satya, means Truthfulness; and Akrodha, means absence of anger.

In the above mentioned ten principles of dharma, there is no mention of worship of God for observance of social or moral order.

The Mahabharata also describes dharma in the sense of duty. The Bhagvad Gita, a part of Mahabharata, explains the meaning of dharma in the highest form of social and moral duty. It speaks of dharma sanstha, means the social order, which is if torn by the corrupt and cruel, must be re-established. So, Krishna time and again reminds Arjuna, one of the five Pandavas in the battle field of Mahabharata War to fight the war as the Kauravas had broken the social order. The Gita is a highly inspirational scripture which continued to remind the duties to be followed by a person living in a system. It speaks of observance of the varnashrama dharma which was the system of social order of the Vedic period. Even during the freedom struggle of India this book was a guide book for the revolutionaries who had waged a war against the British rule in India, for the British had uprooted the native systems.

In other texts too, such as in the Dharma Sutra and in the Arthashastra of Kautilya the concept of dharma was explained in the same way. In the Buddhist philosophy the meaning of dharma or dhamma was explained to find new ways to a better human life. The Jain philosophy uses dharma in the sense of a substance which helps in the smooth conduction of life. It provides pace to life. Its opposite word, adharma means that which keeps a substance standstill. Both are eternal as well as inactive. They need a medium to get active. Jain and Buddha also used dharma as systems of principles for a good life and codes of discipline. For Buddha the dharma is to follow eight-fold paths, whereas Jain mentions three basic conducts, i.e. right

knowledge, right faith and right conducts for attainment of moksha. Jain treats it essential to follow ten dharmas of right conduct- truthfulness, forgiveness, purity, austerity, self-restraint, sacrifice, non-attachment, humility, simplicity, and celibacy. In his first sermon at Sarnath, after attainment of Enlightenment, Buddha gives the message of *dharmachakrapravartan* which means 'setting in motion the wheel of dharma.' By this he unveiled the basic truth of dharma, which are known as the Four Noble Truth. He also treats dharma as eternal, means truth is eternal.

Several schools of philosophy and a number of ancient law-givers also expressed their views on this point. For example, the Mimamsa School of philosophy explains the meaning of dharma in the sense of those karmas or actions which are strictly prescribed in accordance to the Vedas. So, it treats the observance of Vedic rituals as the dharma, and adharma is its non-observance. The Purva Mimamsa School of philosophy strictly adheres to it and says that one acting in accordance to the Veda can only become a man in real sense. A man of misconduct can neither become pure nor can act accordingly.

Similarly, Dharmasutras of Gautama, Apastamba, and Baudhayana explain not only the duty of the four varnas as dharma but also prescribe dharma for the king, as the rajadharma. It means the duties of the royal class. Dharmasutras are also known as the Dharmashastras, and sometimes also called as the smiritis. The Manusmriti, the Naradasmriti, the Brihaspati smriti, and Katyayana smriti are the most important books on ancient law. They also prescribe the duties of different classes of people including the royal class as their dharmas.

So, going through the above details it is understood that the Indian concept of dharma is very wide. It is clearly for observance of a set of principles as prescribed in the scriptures or moral laws. It is a form of duty. The duty of all in a system was prescribed as is found in the modern laws. Thus, in Indian scriptures duties of all -a father to son, son to father, wife to husband, husband to wife, duty of producer, soldier, servant, king and his ministers- have been defined and prescribed. They are often mentioned as pitridharma, putradharma, stridharma, patidharma, krishidharma, kshatriyadharmas, and rajdharmas, all bound to certain types of obligations. Thus, dharma in Indian sense was not restricted to the worship of a supernatural being or God.

3.2.2 Meaning and Concept of Darshan

The meaning of 'darshan' in English is philosophy. As a branch of study in western world philosophy originated in Greece in 6th century BCE. It is consisted of two words - '*philo*' means love, and '*sophia*' means wisdom or knowledge. In this sense the meaning of philosophy is love of wisdom or knowledge. The most famous Greek philosophers were Socrates, Plato and Aristotle who wrote on a variety of subjects such as ethics, education, state, and politics, and guided their followers to the right path. In other sense, philosophy is a mental exercise of reasoning and speculation that seeks to unveil the meaning of life; its reality and relations to environment and other beings; what is good and bad, and how man ought to live. Its canvas is very vast as it encompasses every aspect of life. Man can speculate so much because he is a rational animal, in the words of Aristotle.

As has been mentioned, in Indian knowledge system philosophy is termed as 'darshan', which a Sanskrit word is coming from the root '*drish*' means to see. Here the meaning of 'see', as S. Radhakrishnan writes in his book *Indian Philosophy* 'may be either perceptual observation or conceptual knowledge or intuitional experience. It may be inspection of facts, logical inquiry or insight of soul.' In this sense darshan may have several meanings that depend on the individual's capacity to view a thing or an event. This is a perception of mind based on a certain type of experience that can be sustained through dialectical method. Dialectical method means method of debate, raising doubts, questions, and seeking answers. Man raises many questions as he comes across different types of thing and phenomena. He wants to know true nature of world, its origin, purpose behind its origin, what is soul, what is life, what is God, whether God exists, how is man's relation with God, what is good life, and several such questions. Such questions are tried to be answered not on the basis of faith or feelings but through logical method. Man has been seeking such knowledge since times immemorial and continues to do so apart from the rise of science and discovery of several facts of life and universe. A man is a philosopher or in Indian term darshnik by nature and by birth. To think is his inherent quality.

Indian philosophy or darshan is that system of knowledge in which aspects of reality or *tattva*, mean elements or truth is tried to be known through experience. There are various schools of Indian philosophy that perceive this truth in their own ways. For example, in the Sankhya school of philosophy the number of *tattva* is twenty-five which are considered essential for origin of universe and life. These twenty-five elements are- purush, prakriti, mahatta or buddhi, ahankara, *man*, five

jyanendriya or sense organs, five karmendriya, five tanmatra, and five mahabhoot. They are explained in philosophy on the basis of logical principles.

Indian philosophy, in comparison to Western philosophy, is spiritualistic and practical as it originated to solve the problems of life. Professor M. Hiriyanna also writes in his book *Outlines of Indian Philosophy*, 'Philosophy in India did not take its rise in wonder or curiosity as it seems to have done in the West; rather it originated under the pressure of practical need arising from the presence of moral and physical evil in life.'

Origin of Indian philosophy can be traced back right from the Vedic age and it continued to develop through the Epic period and the Sutra period. In the Vedic age the four Vedas and Upanishads gave the foundation to Indian philosophy. In the Epic period the Ramayana and Mahabharata further developed it. In the third period, i.e. in the Sutra period the six schools of Indian philosophy, namely Nyaya, Vaisheshika, Sankhya, Yoga, Mimansa, and Vedanta developed. Similarly, Indian philosophy was also divided into two groups, the astik or orthodox and the nastik or heterodox.

3.2.2.1 Schools of Indian Philosophy

There are six schools of Indian philosophy. They are- Nyaya, Vaisheshika, Sankhya, Yoga, Mimansa, and Vedanta. Let us know about them one by one.

Nyaya: Maharishi Gautama who wrote Nyayasutra is regarded as the founder of Nyaya School of philosophy. It is a theistic philosophy which believes in the existence of God. Attainment of 'moksha', means liberation of soul from bondage of sufferings, is the ultimate aim of Nyaya philosophy. Nyaya believes in logical discourse, and so Nyayasutra is regarded as an authentic book to study Indian logic.

Vaisheshika: Founder of this school of philosophy was Kanada. It is also a theistic philosophy which believes in God. This school discusses theory of creation on the basis of atomic theory in which four matters, Prithvi, Jal, Vayu, and Agni are considered the basic matters for creation. Along with these matters Vaisheshika also treats God's crucial role in the creation. Thus, it interprets both the material and theistic theories at the same time.

Sankhya: Sankhya is the oldest school of philosophy which was founded by Maharishi Kapila. His Sankhya Sutra is the basis of this philosophy. There was also reference of this philosophy in the *Bhagavad Gita*. Its main philosophy is the theory of causation, termed as *satkaryavaad*, which is the theory of cause and effect, for creation of universe. Sankhya accepts two elements- *purusha* and *prakriti*- due to the

interactions of which matters are created. We have seen above the twenty-five matters mentioned in Sankhya. Among these some are gross matters and some are subtle. Sankhya believes in the evolutionary theory of creation. It treats world full of sorrow and moksha or liberation of soul is desirable, but not through karma but through gyan or knowledge. Sankhya's belief on God is not clear.

Yoga: Founder of Yoga darshan was Patanjali. It is a practical philosophy which considers yoga or physical exercise essential for moksha and not acquisition of gyan or wisdom alone. It also accepts the elements mentioned in Sankhya but adds one more that is God. In this sense Yoga is a pure theistic philosophy, with practical methods. For the physical and mental soundness of body Yogic exercises are considered essential. So, it prescribes Eightfold Path of Yoga which is yama, niyama, asana, pranayama, pratyahar, dharana, dhyana, and samadhi. You will read about them in fourth unit.

Mimansa: This school of philosophy was founded by Jaimini. It is purely based on the Veda, and is a theistic philosophy. This philosophy has three parts, namely, Epistemology; Metaphysics; and Religion and Ethics. Epistemology is related to logical thinking to prove or reject a thesis. Metaphysics deals with the world along with soul, *svarga* or heaven, *naraka* or hell, the Vedic rituals etc. In religion and ethics, Mimansa discusses about human actions or karmas as prescribed in the Vedas and their results.

Vedanta: Vedanta philosophy is the most popular of all. Its basis is the Upanishads. In fact, Upanishads are the last parts of Vedas for which they are also known as Vedanta or the end part of the Vedas. Later on, all philosophies that developed from Upanishads were known as Vedanta darshan. Brahmasutra of Badarayana is regarded as the base book of all Vedantic philosophy. In the later period several philosophers of ancient and early medieval times wrote commentaries on Brahmasutra and thus founded their own sects within Vedanta, such as Advaitavad or Non-Dualism of Shankara; Vishishtadvaitavad or Qualified Monism of Ramanuja; Dvaitavad or Dualism of Madhvacharya; and Dvaitadvaita or Dualism Cum Non-Dualism of Nimbakacharya.

The main thoughts of Vedanta philosophy are about the World, *Maya* or illusion, the Brahma or the Absolute, God, Soul, Individual Self, and Moksha or Liberation.

Meaning of Astik and Nastik philosophy: There are two branches of Indian philosophy, as mentioned earlier, astik and nastik. Those schools which accepted the Vedas as authentic source of knowledge were known as astik, means that which is in the Vedas. Those schools which did not accept the Vedas as authentic source of knowledge were known as nastik. The six schools mentioned above are astik schools as they accept Vedas as source of knowledge in any form or the other. On the other hand, the schools of philosophy of Charvaka, Jain and Buddha are considered as *nastik* since they were anti-Vedic. So, the reason behind calling them heterodox is that they criticised the Vedas. Later on, the two terms were also explained as believer in God (astik), and non-believer (nastik).

Philosophy of Charvaka: The founder of this school of philosophy was Charvaka. However, there are several conflicting opinions regarding its founder. It is regarded as materialistic as well as atheistic or heterodox philosophy. Sometime this school is also attributed to Brihaspati, who had composed several sutras on materialistic theory. It is also known as *Lokayata* since it represented popular view prevalent among people. S. Radhakrishnan writes that it is called 'Lokayata, for it holds that only this world or Loka is.' It means there is no other world or parloka. Charvaka does not believe in heaven or hell. This philosophy neither believes in God nor in soul, nor in moksha as they cannot be perceived by sense organs. For Charvaka reality is that which can be perceived from sense organs. The main saying of this philosophy is 'perception is the only source of knowledge.' The main thought of Charvaka is seeking pleasure in this world. So sometime it is also compared with Hedonism. It says that 'we should fully enjoy the present' by any means.

Jainism and Buddhism: Both are also regarded as the heterodox sects since they do not accept the authority of the Veda and not very clearly accept the existence of God. Both were founded in 6th century BCE as a reaction against Brahmanism based on Vedic principles. Jainism was established by Vardhman Mahavir and Buddhism by Lord Buddha. Both are in fact ethical religions. They outline a number of ethics, such as *satya* and *ahimsa*, truth and non-violence, besides many other attributes for a good life and liberation from bondage of sufferings. Their impacts on Indian philosophy and common living are great. They continued to dominate religion and politics for several centuries. We shall see more about them below.

3.2.2.2 Main Features of Indian Philosophy

After going through the above descriptions, you have come to know about the basic points of main schools of philosophy. On the basis of above discussions, we can ascertain a few main features of Indian philosophy. They are-

(A) Except a few ones, all schools of Indian philosophy treat the world full of sorrows and sufferings. For example, the first principle of Buddha's Four Noble Truth is that there is sorrow everywhere. It was also accepted by other schools. Sankhya says, this world is ocean of sorrow. The Veda accepts three types of sorrow, first, *adhyatmik* means spiritual sorrow which is physical and mental; second, *adhi-bhautik*, the external sorrow, which means pains coming from others; and third, *adhi-daivik*, means pains created out of calamities and spirits. So, several western scholars alleged that Indian philosophy is pessimistic. However, Max Muller, a German Indologist, does not accept this view and writes, 'all Indian philosophy professes its ability to remove pain, so it can hardly be called pessimistic.'

(B) Law of Karma or action is an important characteristic of Indian philosophy. It is based on the principle of cause and effect, means as we do, so we get. It goes like cosmic principle which has been mentioned in the Veda as *rit* which means the system of this world. But here karma is also related to past and future actions due to which several births of a man take place. So, sometime it is related with fatalism. But the main merit of this law is that it raises hopes, to better one's life.

(C) Except Charvaka, all schools of philosophy believe in existence of soul. They all want to know about the self. It is separate from physical body, and indestructible. But Charvaka considers both body and soul the same. Consciousness is the main feature of soul. Besides Shankar who thinks the soul One, all others take it as more than one or dualistic.

(D) Indian philosophy is spiritualistic. In every aspect of life people have been led to live with spiritual motives. Even if doing essential duties of everyday chores of life people were reminded of their connection with the Almighty. The Vedic hymns and rituals were meant to get gods' blessings for prosperity and security in life. So, the philosophers of ancient times explained the meaning of life and what should be people's duty towards individual, the society and the state. In this way, Indian philosophy was both spiritual and practical at the same time.

(E) There are some practical aspects of Indian philosophy because it ventures to solve problems of life. Philosophy in India is 'a way of life, not merely a way of thought.' Development of philosophy in Indian took place to relieve the pains of life. So,

philosophy is a means to get relief as well as to achieve the four main ends of life, the four purushartha, namely dharma, artha, kaam, moksha. Dharma means prescribed duty; artha means the livelihood and occupation; kaam means the pleasure of life, including sexual pleasure; and moksha is the ultimate goal, that is, to get liberation from cycles of rebirths and sufferings.

(F) Indian philosophy ventures to remove ignorance which is considered source of all evils. In this sense philosophy makes man wise, and capable of taking decisions. For Buddha, ignorance means not knowing about the Four Noble Truths which are sources of all sufferings. After getting to the truth a man becomes enlightened. In the Sankhya and Yoga philosophy meaning of ignorance is non-discrimination or indiscretion by which we are unable to understand real nature of universe and self. Ignorance is removed only by means of right knowledge about life. Buddha outlines ashtangik marg, means the eight-fold path, to remove all sorts of ignorance which are- Right View, Right Resolve, Right Speech, Right Action, Right Livelihood, Right Efforts, Right Mindfulness, and Right Concentration.

All philosophies, in the same way, offer methods to acquire right knowledge. Sankhya, Nyaya and Vaisheshika think it can be got by rational thinking and having the knowledge of elements of nature. Yoga gives emphasis on practical aspects of life. Mere getting the knowledge is not important in Indian philosophy, but to meditate over the knowledge is equally important. Yoga, thus gives importance both to soundness of physical and mental health.

So, the Indian Philosophy is closely related to day-to-day life of man. It shows the right path to lead a good life.

3.3 The concept of Vasudhaiva Kutumbakam

In this section you will read about one of highest ideals of Indian philosophy. It is known as the concept of Vasudhaiva Kutumbakam. Let us see in detail below.

3.3.1 Concept of Vasudhaiva Kutumbakam: Vasudhaiva Kutumbakam means the whole world is a family. It is consisted of two Sanskrit words –*Vasudha*, means earth and *kutumb* means family. It appears in the Maha Upanishad which is part of the Sam Veda. The Maha Upanishad has six chapters which starts from the story of creation and further it deals with the main theories of Upanishads, i.e. what is Brahma, Atma or self, gyan or true knowledge, vairagya or mortification, moha or endearment. In the last two chapters Rishi Ribhugives sermons to his son Nidagha on true knowledge of life

and on the broadness on one's mind. In this context, in the sixth chapter, the shloka appears.

It goes like this- *ayam nijah paro veti ganana laghuchetsaam*
udaar charitaanaam tu vasudhaiva kutumbakam.

This sloka has been translated into English like this-

*“One is a relative, the other stranger,
say the small minded.
The entire world is a family,
live the magnanimous.”*

The Maha Upanishad is a small Upanishad, but it contains very deep thoughtful ideals of Indian mind. A close examination of it would reveal that it encompasses man, family, society and the whole world in one integrated bonding. It is an explanation of Vedantic philosophy. By knowing true nature of this cosmic world and its relation to human beings it can be said that all are one. The individuality of a man with the other is just a physical one. All Upanishads in one sense or the other give the same message of oneness. We feel different from others due to an illusion which compels us, according to the Maha Upanishad itself, to think that ‘it is I, it is mine’ and further, ‘it is He, and it is I that is mine.’ The Upanishad, here, enlarges the horizon of thought in regard to man's place in family, society and the world. By following the principle of vasudhaiva kutumbakam a man can feel himself belonging to the whole humanity. Since the Upanishad believes in one self, it declares ‘there is no such place where I am not existing.’ ‘All this is indeed Brahman; all this extended reality is the Self. I am one and this is another -give up this illusion.’

The main teaching of all Upanishads is to make human beings aware of unnecessary attachment to worldly pleasure and longing. They support self-satisfaction; a simple living, high thinking. By renunciation of too much longing one can feel immense pleasure of life. This message of Upanishads is universal and for the whole mankind. The Upanishads, in fact, preach social harmony.

The concept of Vasudhaiva Kutumbakam envisages a man who is not selfish, rather a magnanimous one. He should renounce his egoism, adopt reason and good conducts. He should renounce selfish behaviour of ‘me’ and ‘mine’. For such man the whole world is a family. This concept has been accepted as the key to a good and harmonious life in a world of diversity.

There are other hymns in the Rig Veda and Atharva Veda which also have the similar meaning of oneness among all. For example, the Saumanasya sukta of Rig Veda also speaks of togetherness among all and to avoid conflict. The sangyan sukta of Atharva Veda also speaks of cordial relations among all.

3.3.2 Significance of Vasudhaiva Kutumbakam: Vasudhaiva Kutumbakam is seen as the ancient Indians' desire to live a peaceful life in accordance to nature as well as in harmony to all. It was rightly thought that for a peaceful co-existence a life of moderation and non-interference in others affairs were essential. It also reveals principle of a collective life in which no one should claim authority over natural resources. Our ancient scriptures have time and again dealt this aspect of human life and warned human beings against selfish behaviour and greediness. It happens if one thinks others different from himself. But the concept of Vasudhaiva Kutumbakam always preaches the principle of brotherhood, fraternity, a simple living, and oneness.

Check Your Progress I

1. Define dharma according to Indian views.
2. What do you mean by darshan?
3. Name six schools of Indian philosophy.
4. What are the main principles of Charvaka philosophy?
5. What do you mean by vasudhaiva kutumbakam?

3.4 Polity and Governance

In this section you will learn about ancient Indian polity and governance. It means how was the nature of state in ancient India, and how did the ruling dynasties organise their system of government.

3.4.1 Meaning of Polity in Ancient India

Every society governs itself in some way or the other. For this, it forms a system of government, or the processes which help in governance. This system of government is known as polity, or science of politics and government. In modern state system this is studied under the branch of Political Science. In ancient India there was not one word for study of state system, rather it was known variously as Rajadharma, Rajyashastra, Dandaniti, and Arthashastra. While the first two are clearly related to monarchy, the Dandaniti was related to application of force in state-craft. Manu says that 'the

ultimate sanction behind the state is force.’ The state uses it to rule and to protect the subjects as well. So, Danda combined both people and the state with one another. The meaning of Dandaniti has been expressed like this- ‘the rules about the functions and duties of the king and the welfare of the state were called Dandaniti.’ The Mahabharata, the Arthashastra, Manu Smriti, and Usanas’ and Prajapati’s works known as Dandaniti describe about it in detail.

Kautilya used the term Arthashastra for broad subjects like system of government, origin of state, different branches of administration, duties of king and his ministers, duties of officials, and so on. His book known as Arthashastra is, in fact, a book on ancient political economy. Some other texts such as the Ramayana, Mahabharata, Smritis, Kamandaka Nitisara, the Nitivakyamrita of Somadeva Suri who was a Jain writer of 10th century, and Shukra’s Nitisara also deal with various aspects of politics. The Shanti Parva of Mahabharata is very relevant on this topic.

3.4.2 Forms of Government

There was not one form of government in ancient India. Rather, several types of systems were prevalent, such as clan system, monarchy, republic and feudal state. But among all, the monarchy or kingship was the most widely accepted form of government.

During the Rig Vedic period the Aryans were divided into clans of a number of tribes. The term panchajana refers to presence of five dominant tribes at that time. There were several other tribes. The Bharatas, mentioned in the Rig Veda, were one of the most powerful Aryan tribes who got victory in the Battle of Ten Kings. The Bharatas defeated the Purus and their allies. At that time, big territorial units had not been established. The Aryans had established only small kingdoms based on clan affinity. The head of such a clan was known as rajan, elected by an assembly called samiti. Rajan was the protector of his tribe. He had not the unlimited power. It was a combination of clan system as well as the initial form of kingship. It was consisted of a number of patriarchal families. Families were formed into grama, vis, and jana in increasing orders. Grama, consisted of several families, was under the headman known as gramani. Vis was a collection of many villages under visapati. Viswas developed into a larger unit of a particular tribe. It was called as jana. There were a number of such units, each under a king. The five earliest kings were the Purus, Tugvasas, Yadus, Ayus, and Druhyus.

3.4.2.1 Kingship

Kingship was one of the most popular forms of government. There are several theories regarding the origin of state and kingship. According to Shanti Parva of Mahabharata 'society flourished without a king or law court without a king', before it fell into degeneration. The strong 'devoured' the weak, as it is termed as '*matsyanayaya*'. In this situation, 'Brahmadeva, the chief god, thought over the matter and came to conclusion that human society can survive only if a code of law was framed and enforced through the instrumentality of a king.' Thus, the code was created, the first king, Virajas, appointed, and people agreed to follow his orders. The same Shanti Parva also states about a contract by which the king Manu became the king on assurance given by people to follow the law and pay necessary taxes. In the both, the state is regarded as the divine institution. But in some Brahmanical and Buddhist literature, especially Digha Nikaya, we find like a contract theory. It states that when anarchy and chaos appeared, people gathered and decided to elect a wise, virtuous and able man to put an end to anarchical situation. A contract was made with such a man, according to which, he would rule justly and in return he would get a part of their property (paddy) as tax. Such a man has been termed as '*mahasammata*', '*khattiya*' and '*raja*'.

The state developed from the small territorial settlements of the Aryans who were concentrated in the region of Sapta-Sindhu, identified as the settlements around seven rivers namely, Indus; and its five tributaries- Sutudri (Sutlej), Vipas (Beas), Parushini (Ravi), Aksini (Chenab) and Vitase (Jhelum), the five rivers of Punjab; and Sarasvati. The Aryans expansion took place from Punjab to modern Delhi, western Uttar Pradesh and Ganga-Yamuna doab region between 1000 BCE to 500 BCE. The realignment of small kingdoms that took place after the Battle of Ten Kings led to the formation of new states or janapadas each held by a raja or king. By the 6th CBE the numbers of such janapadas reach to sixteen. Some of them were Anga, Ashmaka, Avanti, Chedi, Gandhara, Kamboja, Kashi, Kosala, Kuru, Magadha, Malla, Matsya, Panchala, Suraseana, Vatsa, and Vajji. Among them, most were hereditary monarchical.

Kings position was increasing with the states becoming powerful. He led his people in the war, protected them from aggression, and ruled according to dharma or rules provided in the scriptures. Buddhist and Brahmanical texts clearly define responsibility and powers of a king. Raja had not only to punish the offender, but also to reward the meritorious and deserving. As seen from various sources, main duties of

king were to punish the thieves and protect private property, to punish adulterer, to ensure observance of Varna dharma, and establish dharma-based state.

3.4.2.2 Overlordship

Another system of government was the overlordship or quasi-feudal system which was based on relation of lord and vassal chiefs. Terms in the Vedic literature 'adhiraja and Samrat' seem actually to imply lordship over a number of feudatories.' During the Mauryan period several vassal chiefs existed, particularly in the remote regions. 'The vassals themselves had vassals of their own in petty local chieftains calling themselves rajas.' But in India such relations were not based on any form of contract, as one finds in European feudal system. Here a vassal came into existence by conquest, not by contract. Weak kings voluntarily paid homage to a strong king. As mentioned in the Epics and Smritis, "Lawful conquest (dharmavijaya) did not involve the absorption of the conquered kingdom, but merely its reduction to vassal status." But Gupta king Samudra Gupta did not follow this injunction, as he assimilated the conquered territories. The vassal lords performed duty also to their overlord. Big vassal was known as mahasamanta who had his own administration and army, and they could pose threat at any time to the emperor. For example, Dantidurga Rashtrakuta, actually a vassal of the Chalukya dynasty, overthrew it and established his own dynasty in 753 CE. The Chalukya regained power after two hundred years. This time its vassals were the Yadavas, Kakatiyas and Hoyasalas.

3.4.2.3 Republics

Other forms of polity also existed in ancient India, for example, oligarchies and republics. Most of the tribal states, the *ganas*, were governed by oligarchies in which the elders looked after the administration. They are often compared with republics, but not in modern sense. We get references of such *ganas* in the Vedic literature. The Buddhist scriptures mention the existence of many republics, mostly tributary, in the foothills of the Himalayas and in the Northern part of Bihar. They were non-monarchical. The Greek historians found both forms of government, monarchical and non-monarchical, in the Punjab region at time. Thus, there are references of some of the *gana* states, such as, the Yadheyas, the Sakyas, the Malavas, the Vrishnis and the Lichchhavis. They can be called as republics in the same sense as those of the ancient Greece or Rome states where power was not actually in the hands of citizens but in the hands of a few selected persons. In those *ganas* the kshatriyas dominated but they did not enjoy position of the ruling class. "The descendants of the original kshatriya

families (who were founders of a *gana*), whose heads were called rajas, were known as *rajanyas*, while rest of the kshatriyas were known as *rajanas*.” In the Lichchhavi Sangha or republic, according to Buddhist literature, there were 7707 kings, who were actually original Kshatriya settlers. *Lalitavistara*, a Buddhist text, says that ‘everybody at Vaishali considered himself to be a king.’ Political power in a *gana* was shared by a number of classes, such as Brahmanas, military and trading classes. Almost all the republics had assembly for governance. They were constituted of smaller units, may be provinces, and villages. All members were entitled to attend the assembly. The assembly, where sovereignty was vested, elected members of executives and military. In the later period, however, the higher posts were becoming hereditary. The assembly also took decisions on foreign affairs and peace and war. The assembly controlled the executive, the number of which was not same in all republics. For example, the Malla state had four and the Lichchhavi and Videha had eighteen members in the executive. Meetings were held on all important social, religious and political matters. Internal conflicts and dissensions were common among the members of *ganas*. But many such internal conflicts were solved, not by votes, but by the interference of elders. In an ideal republic, as mentioned in the Shanti Parva of Mahabharata, youths should follow ‘path of virtue and the lead of the elders.’ Party-politics at court cannot be ruled out outrightly. Later on, the Buddhist Sangha was also modelled on the line of republics. Opinions were collected in favour of or against a motion, after ensuring the quorum, or the required number of members to be present in the meeting. A good example of such practice was seen in the Shakya *gana* where, at the threat of Kosala invasion a meeting was held on the question to open the gate or not.

The number of republics was fairly big before the Mauryan period. They were organised on clan lines, and sometimes they formed a confederation against a common enemy. But they disappeared after 400 CE. The imperial Mauryas, the Kushanas, and the Guptas certainly overshadowed their identity.

3.4.3 Organs of the State

Kautilya’s Arthashastra mentions seven essential organs of the state. This is known as the Saptang Siddhant of State. The seven organs of a state were- swami, amatya, janpada, durg, kosha, danda, and mitra. Swami means head of the state, may be a king or raja. Kautilya says that a swami should be high-born, intelligent, bold and full with personal qualities. Amatya was a member of bureaucracy or civil servants.

There are mention of thirty-six types of amatya, the main among them were the chief purohita or priest, minister, treasurer, officials who looked after civil and criminal cases, in charge of royal household, ambassador, superintendents of different departments, etc. Kautilya restricts the number of ministers to three or four, but number of amatyas can be fixed by the employer according to requirement. The Jataka Tales mention hundreds of amatyas belonging to different classes of people. They were employed to look after common services. Ministers functioned as councillors. In the post-Mauryan period amatyas were called as sachiva, or secretaries, who were employed on higher posts in a department. Janapada in the Arthshastra indicates a combination both of population and territory, means a group of people living within a territory. Such a land should be fertile, and populated by hard-working people, like artisan, trader, agriculturist. Durg means the fort, which was built in the centre, such as in the capital of the state. It was important for defence of the state. Kosha or treasury was an important part of administration. Kautilya says that king should keep his treasury full by goodwill and lawful means. It should be full of gold and silver, and pearls so that they could be used during emergency. It was also important for maintenance of army. Danda in Arthashastra has been referred as army, of four types, infantry, cavalry, elephant, and chariot-soldier. Soldiers may be hereditary and mercenary. The seventh organ of state is *mitra* or friends who should be dependable in the time of need. A friend can also be a friendly state in the neighbourhood.

Organs described above remained in theory and practice in all the states of ancient India.

3.4.4 Sabha and Samiti

Vidatha, sabha and samiti were popular assemblies during the Vedic period. Vidatha was a big assembly representing the entire gana or tribe of the Aryans. It has been referred more times than the other two assemblies in the Rig Veda. Women also used to take part in the Vidatha. R. S. Sharma is of opinion that Vidatha was more popular during the Rig Vedic period, and sabha and samiti became popular only in the later Vedic period. He considers Vidatha special for various reasons, first, there was women's participation in it; second, it indicates matrilineal society in the beginning; third, it discussed over military and religious matters.

In the later Vedic period *sabha* and *samiti* seems to be the most prominent assemblies. Both were different bodies, however the exact nature and functions of sabha are not

clear. It was used for various purposes. Thus, on the basis of references in Rig Veda, Atharva Veda and in Brahmana literature it can be said that sabha was place for gambling, a place for community music and dance. Members discussed on how to domesticate wild animals, taking decisions of village disputes and sometimes even political matters. Many times, king also used to attend the sabha. Political and administrative matters were also disposed in the sabha. Members of the sabha gave suggestions to king, which was looked into very seriously. K. P. Jayasawal's opinion is that decisions of sabha were binding upon everyone. It seems that it was becoming more a political institution than a social gathering.

Samiti was an assembly of later period. It was a bigger assembly attended by all members of the tribe. Its proceedings were not limited to political matters alone. Rather it discussed religious and philosophical matters too. It was a powerful assembly which could put restrictions even on the king. So, the king always tried to get its confidence in his working. A 'true king' always paid visit to the samiti. It was also expected that samiti should remain loyal to the king. King distributed land to his people after consultation in the samiti. All wished for agreement in the samiti, rather than disagreement. Members prayed for cordial environment and agreement. But this agreement was reached upon only after a debate in the samiti. In this way it was a very important institution for debate and discussion. Everyone taking part in such a debate wanted to prove his eloquence and ability of argument. It was, in this sense, a pure democratic institution in the modern sense.

Both representative bodies ceased to remain important and function as political bodies in the later period. We find very few references of theirs.

3.4.5 History of Polity and Governance

Polity since the Mauryan Period: The Mauryan system of government was highly centralised monarchy. Smaller kingdoms and republics became insignificant, though some of them continued to hold autonomous status. The Arthashastra mentions a few republics such as Kamboja, Lichchavis, Vrijis, and Panchala. The kingship under Chandragupta was despotic, but under Ashoka it became a paternal despotic. He treated his subjects as his children. His aim was welfare of his people. Arthashastra also suggests that king must be available to his subjects at all times. King was the upholder of dharma. He maintained social order.

There was a council of ministers or mantriparishad to advise the king on all administrative matters. Its number was not fixed, however, there was a small group of

influential ministers, as inner council. The king appointed ministers of his choice. There were a number of central government officers and superintendents of various departments. Thus, we get examples of superintendents of tolls, weaving industry, agriculture, liquor-shops, slaughter house, prostitutes, cows, gold and goldsmiths, commerce, forest produce and many others. The empire was divided into provinces, for example, during the time of Ashoka there were four provinces, namely, Taxila, Ujjain, Tosali and Suvarnagiri. Pataliputra in Magadha was the capital. Princes served as royal governors in the provinces. Provinces were further divided into districts which were administered by a group of officials such as rajuka and yukta, assisted by other lower rank officials. The lowest unit of administration was the villages.

The king was always informed on all important affairs of the state through his trusted agents, such as pulisanis and pativedakas. They have been mentioned in the edicts of Ashoka, along with the mahamattas, who looked after the judicial administration. Ashoka had started the service of a special officer, called as the dhammamahamattas, in his 14th regnal year. His main work was to spread the message of dhamma to which Ashoka had started his association and affinity. The Arthashastra and Megasthenese's Indica mention about an elaborate system of military organisation during the Mauryan period. Infantry was of the first importance. Kautilya mentions three types of soldiers, the hereditary soldiers, mercenaries, and soldiers of corporations. Hereditary soldiers formed the standing army of the state. Cavalry, chariots and elephants were other organs of the army. Megasthenese also mentions about the fleet. He gives descriptions of six committees, which controlled the six divisions of army, namely the fleet, the supply, the infantry, cavalry, chariots, and elephants.

It is generally accepted that land belonged to the king and cultivators paid rent of one-fourth of the produce. The Rummindei Inscription of Ashoka gives a good description of land revenue system of the Maurya. It mentions two types of land tax, Bhag and Bali. Bhag was a land tax, normally collected one-sixth of produce, from land under individual or collective ownership. Bali was a type of tribute to the king on land produce. It was an extra tax, other than Bhag. There were non-agricultural taxes collected as tribute from herdsmen and shepherds in the form of cattle. Craftsmen and traders were also taxed. Traders paid one-tenth of value of goods sold as sales tax. Some other types of taxes were house tax, tax on irrigation, pasture, entry and exit tax in town, etc.

Post-Mauryan Polity: In the post-Mauryan period the Satvahanas, the Kushanas, the Guptas, and the Cholas of the south India founded sound system of government. The kingship under Satvahanas was also hereditary but kings did not claim to be a divine king. He worked on the principles as mentioned in the ancient law books. Satavahana princes, the Kumaras, were in charge of provinces. Some parts of empire were under direct state control divided into janapadas, others were vassal states. There were further administrative divisions of janapadas. The feudatory kings under Satavahanas paid allegiance and tribute to the king. Feudatories were known by various titles such as the raja, maharathis, mahasenapatis, and mahabhojas. The maharathi, among them, had some special privileges, such as they could grant land, and could issue their coins. Mahasenapatis were appointed in far off provinces. All the feudatories helped the Satavahana kings in war campaigns and in administration. The king had a group of regular officials. Amatya was an important part of Satavahana administration. He was like mahamatta of the time of Ashoka. State officials were perhaps paid in cash as is presumed from a long list of donations given in karshapans, the coins. Revenue was also collected both in kind and cash. A very dominant feature of Satvahanas administration was role of traders in city administration. The number of cities during the period of Satavahanas was the biggest. Some of them were – Bharuch, Sopara, Kanheri, Paithan, Karle, Govardhanan, Nasik, Brahmapuri, Amravati etc. Members of City Corporation were traders who managed local self-government at city level. Similarly, village administration was also highly developed. In all, the Satavahana state machinery was simple.

Kushanas were one of the Central Asian tribes who established their sway in the Northwest frontier replacing the Shakas, Indo-Greeks, and the Parthians in the first century CE. They had two houses or dynasties, the Kadphises and the Kanishka. Kanishka I was the greatest king of this dynasty. The centre of Kushana Empire was in Bactria, but it was extended in India up to the Gangetic basin, as far as Varanasi. Mathura was its capital in India. Kushana issued largest number of gold and copper coins. Kushana kings adopted titles such as mahishwar, maharaja and rajatiraja. The Kushana kings did not have direct rule and control over a large part of their empire. There is no clear information about the number of provinces under them. Kshatras were appointed to administer provinces. They were very powerful and behaved like independent rulers. Dandanayaka or mahadandanayaka played important role in administration. He was a military officer who belongs to the royal family. He

performed magisterial and judicial duties. References of mahadandanayaka are found from several inscriptions of Mathura. Perhaps Kushana officials were paid in cash as can be presumed from the number of coins they issued. Gold and silver for this purpose were imported from the Central Asia. In fact, the Kushanas had served as a link between the Central Asian and Indian trade and administration. The Kushanas continued old practices of village administration, however, the tendency of getting land grants increased. In fact, the feudal character developed during this period.

The Gupta Administration: The Guptas established their empire in the 4th century CE. The Gupta Empire extended from Kashmir in the north to Ujjain in the south and from Gujarat in the west to Bengal in the east. This period in Indian history is known for all round cultural development and economic prosperity. Politically it is known for military campaign, the digvijaya, of Samudragupta, and western campaign of Chandragupta II in the western India. First reference of sale and purchase of land also appears during this period in north Bengal.

The kingship of the Gupta period was based on strict principle of dharma mentioned in the sutras and shastras. The king was protector of dharma. The king adopted titles like 'parameshwar', 'maharajadhiraja', and 'parambhataraka'. Such titles make clear the existence of smaller kings and chiefs in the Gupta Empire, who were feudatory to the Gupta rulers. The Gupta kings appointed ministers, army generals, and regional rulers. They claimed right of tax collection in lieu of protecting their subjects as enshrined in the smritis. In the smriti of Katyayana, it is mentioned that the king collected tax since he was the owner of land. Thus, he had right to donate land. This supports the feudal character of the state, in which lands were granted to Brahmans, army officers, and regional rulers. Like the Satavahana kings, the Gupta rulers also compared themselves frequently with Hindu gods such as Yama, Kubera, Varuna, Indra, and many others. They protected people like Vishnu. Gupta coins had numerous impressions of Lakshmi, the Goddess of prosperity. This was the great period of revival of Hinduism. But king was not arbitrary. He functioned according to laws mentioned in the law books. Perhaps Brahmans dominated in the administration. Similarly, the land grantees and feudal lords, traders and craftsmen, all were treated well.

There was a high-class bureaucracy in the Gupta period. Most important administrative posts were of mahadandanayaka, kumaramatyā, and sandhivigraha. A few ministers like Harishena were so powerful that they held all the three posts at a

time. Kumaramatyas were in-charges of bhuktis. They held considerable influence in their administration. In the later part of the Gupta rule many kumaramatyas became independent. Sandhivigrahawas minister of managing peace and war. During Samudragupta period, Harishena held that post, along with two other posts. Higher posts were normally given to people of high origin. Posts of ministers or in charges of divisions and districts were becoming hereditary. State officials were paid in both forms, in cash or in the form of land grant. The Gupta kings also issued gold coins in large number. The Gupta kings maintained a big army. Archery and cavalry were highly developed. References like 'ashvapati', 'mahashvapati' or 'bhatashvapati' signify the presence of mounted archers in the Gupta army. Taxes were collected both in kind and in cash. Taxes were also collected from traders and craftsmen. The corporations also played important role in this regard. An officer called as 'pustapal'maintained the record of sale and purchase of land at district level or vishaya. Similarly, records of village land were also maintained. Ayuktas looked after the work of assessment and collection of land revenue. There were a number of lower-level revenue officials like divir, karnik, and kayastha.

Provincial and local administrations were well-organised. Directly administered territories were divided in provinces, known as bhuktis, governed by uparikas. Exact number of bhuktis is not known. There were as many as six bhuktis. Some of the bhuktis were Tirabhukti, Nagarabhukti, Sravastibhukti, Pundravardhanbhukti, and Ahichchatrabhukti. Provinces were also called as desas, at other places. Bhukti was divided into vishayas or districts, which were under vishayapatis. They worked under uparikas or sometime directly under the king. The headquarters of a vishaya was known as adhisthana. Rajagriha, Pataliputra, and Gaya were vishayas under the Magadh bhukti. Maintenance of law and order and collection of taxes were main works of the provincial and local administration. Further divisions of bhuktis were vithis and grama. There were several such vithis in Bihar and Bengal. Provincial or district administrations worked with the help of a number of lower rank officials, such as, dandikas, Prathama kulikas, pusta-palas, nagara shreshthi. There were city councils.

Maintenance of law and order was the responsibility of dananayaka or dandika. They commanded adequate number of forces. The judicial administration was diversified. Distinction between the civil and criminal cases were laid down. The Narada Smriti, the Brihaspati Smriti and Kamandaka Nitisara, written during the

Gupta periods, give new insights on judicial and general administration. The Brihaspati Smriti, or Law of Brihaspati divides laws in eighteen books, out of which fourteen are related to civil laws, and the rest are related to criminal laws. Civil laws were concentrated mainly on property right, sale and purchase of land, mortgages, and contract. It is important to know that during the Gupta period the concept of private ownership over lands and their sale and purchase had developed very much so laws were also framed concerning them. Justice was done on the basis of evidences. However, regarding the composition of courts very few evidences are available. Courts were working right from the apex to the lower-levels. Craftsmen and traders had separate courts to dispose their grievances.

South Indian Polity: The Pandya, the Chola and the Chera were the earliest kingdoms during the Sangam age in south India. In the 4th century CE, the Pallavas dominated the politics of south India, and after their downfall there was resurgence of the Chola in the middle of the 9th century CE. The Cholas established their supremacy over the ruins of the Pallava kingdom. They made Tanjore their capital. The Chola administration was highly organised, centralised and efficient. There was little impact of feudal dominance in the Chola administration, as was there in other kingdoms of the south. The king was centre of all powers; however, he was advised by a council of ministers. Administration was conducted smoothly with the help of different grades of officials selected on birth right and by their efficiency. Hereditary right in kingship was recognised and eldest son succeeded his father. The Chola kings also claimed divine origin. They adopted titles like 'Chola-Martanda' or 'Chakravartigala.' All decorum was maintained to magnify the majesty of the kings.

The Chola kingdom was divided into several provinces which were known as 'mandalam'. Mandalam was administered by a highly efficient person, normally of a royal blood. A mandalam was further divided into 'kottams'; and kottams into 'nadas' or valanadu. Nadas were like modern districts. A nadu was consisted of a number of villages known as 'kurram'. In this way villages were the smallest units of administration. Officials were normally paid by assignment of lands. The king collected land revenue on the basis of survey and classification of the land. This system was introduced during the time of Chola king Rajaraja I (985-1014). He collected land revenue, either in kind or cash, at the rate of one-sixth of the produce, however, it was not the fixed rate. Some other kinds of taxes were toll tax, profession tax, salt tax. Judiciary worked from apex to village levels, with right to appeal to the

higher court. Serious cases were punished, if found guilty, by death sentence, but ordinary cases were met with fines and imprisonments.

The Chola period is better known for its local self-government, particularly the village administration. The central government did not interfere in its functioning. Village was administered through assemblies, such as the 'Ur', 'Sabha' and 'Nagaram'. The Ur was a general assembly of the tax paying villagers. Sabha was the assembly of those villages, normally rent-free, which were settled by Brahmanas. The Nagaram was assembly of traders. The assemblies functioned in the interests of the community, without much interference by the central government representatives.

Check Your Progress II

1. What do you mean by dandaniti?
2. Name chief republics of ancient India.
3. What was Saptang Siddhant of State?
4. What were Sabha and Samiti?

3.5 Let Us Sum Up

After reading this unit you must have understood the meaning of several concepts such as dharma, darshan and vasudhaiva kutumbakam. Dharma in ancient India does not represent any form of worship, rather it means a social order based on moral values. It was the highest form of duty based on and prescribed by ancient scriptures. Similarly, darshan also represents the views of Indian intellectuals on various aspects of life and origin of the Universe. Both are the part and parcel of ancient intellectualism. They shaped the pattern of life of individual and society and also gave philosophical base to ancient polity and governance. It was the highest ideal of Indian life which came up in the thought of universal peace and harmony.

3.6 Key Terms

Dharma – stands social duty and moral conduct

Darshan – stands for ancient Indian philosophy on meaning life

Astik and Nastik – astik meant one who had faith in the Vedas, and

Nastik meant who did not have.

Vasudhaiva Kutumbakam – the whole world is a family

Saptang Siddhang of State – the seven organs of a state namely swami, amatya, Janapada, durg, kosha, dand, and mitra.

Janapada –early settlement of the Aryans, combining land and people

3.7 Questions and Answers

3.7.1 Short-Answer Questions

1. What do you mean by dharma? Explain with references.
2. What do you mean by darshan? Explain with references.
3. Discuss the main features of six schools of ancient Indian philosophy.
4. Write a short note on the heterodox sects of ancient India.
5. Discuss the concept and significance of Vasudhaiva Kutumbakam.
6. Explain the meaning of ancient polity.
7. Write a short note on Sabha and Samiti.
8. Write a short note on Gram Swarajya.

3.7.2 Long-Answer Questions

1. Discuss the meaning and concept of dharma and darshan on the basis ancient Indian texts.
2. Discuss the main features of Indian philosophy.
3. What do you mean by polity in ancient Indian concept? Discuss various forms of polities in ancient India.
4. Discuss the history of ancient Indian polity and governance.
5. Discuss the concept of Janapada and Gram Swarajya with examples.

3.8 Further Readings/Suggested Readings

- A. L. Basham, The Wonder That was India
- A. S. Altekar, State and Government in Ancient India
- D. D. Koshambi, the Culture and Civilisation of Ancient India in
Historical Outlines
- D. N. Jha, Ancient India- In Historical Outline
- D. P. Chattopahdyaya, Studies in Indian Philosophy
- H. C. Roychoudhuri, Political History of Ancient India
- K. A. N. Shastri, History of South India
---Do--, Studies in Chola Administration
- K. P. Jayasawal, Hindu Polity
- Romila Thapar, History of Early India
- Rajesh Verma, Idea of Bharat
- S. Radhakrishnan, Indian Philosophy, Vol I, & II

3.9 Answers to Check Your Progress

Check Your progress I – Answer 1. See 3.2.1; Answer 2. See 3.2.2;

Answer 3. See 3.2.2.1; Answer 4. See 3.2.2.1; Answer 5. See 3.3.1

Check Your progress II- Answer 1. See 3.4.1; Answer 2. See 3.4.2.3;

Answer 3. See 3.4.3; Answer 4. See 3.4.4; Answer 5. See 3.5.1

Unit IV

SCIENCE, ENVIRONMENT AND MEDICAL SCIENCE

Structure

- 4.0 Introduction
- 4.1 Objectives
- 4.2 Science and Technology in Ancient India
 - 4.2.1 Pre-Historic Technology
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 - 4.2.2.1 Cosmology
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 - 4.2.2.3 Physics
 - 4.2.2.4 Chemistry and Metallurgy
- 4.3 Health Consciousness (Science of Life): Ayurveda, Yoga and Naturopathy
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- 4.5 Let Us Sum Up
- 4.6 Key Terms
- 4.7 Questions and Answers
 - 4.7.1 Short-Answer Questions
 - 4.7.2 Long-Answer Questions
- 4.8 Further Readings/Suggested Readings
- 4.9 Answers to Check Your Progress

4.0 Introduction

In the previous units you have read about India's contributions in spiritualism, philosophy, art and literature. But Indian knowledge system was holistic. It gave

equal importance to practical aspects of life, and tried to solve questions related to universe, science and technology, environment, and wellness. The Indian mind was inquisitive. Indian sages, in fact the scientists, tried to find out the reasons behind natural phenomena. They studied the cosmic world, the flora and fauna, and their relations with human beings. In this process, they developed a system of thought and practices which were indigenous and original. In some areas, the Indian mind surpassed even their contemporaries in the Greek and Roman world. In this Unit you will read about India's contributions in science and technology, mathematics, environmental conservation, and world's most famous medical system, that is Ayurveda and naturopathy.

4.1 Objectives

After reading this unit you will be able to discuss and interpret –

- Indian interest in scientific enquiry
- application of science for common well-being
- contributions of famous ancient scientists
- Indian medical system such as Ayurveda, Yoga and naturopathy

4.2 Science and technology in ancient India

Science is related to study of nature and its behaviour, on the basis of which a perfect knowledge is acquired to relate it to the benefit of the human beings. This knowledge is acquired after a close observation and experiment. This leads to establishing a scientific theory. Scientific temper was always there behind the progress of human civilisation. This could be seen in the ancient civilisations of India, Greece, or China. However, Indians surpassed all of them in many respects, most particularly in mathematics, astronomy, medicine, and architectural engineering.

4.2.1 Pre-Historic Technology

In the pre-historic age, human beings used to make different kinds of stone tools and implements. Making of such tiny tools can be said to be the first examples of technology. In case of India, examples of ancient technology can be seen since the time of old stone age when man made tiny stone tools such as hand axes, cleavers, and choppers. They have been found in Sohan valley in Punjab (Pakistan), Belan valley in UP, Didwana in Rajasthan, Chikri-Nevasa in Maharashtra, Bhimbetka in MP, and at several other places. Those tools were meant for hunting, and thus related to livelihood. In the Neolithic period, about 7000 BCE in context of India in Mehrgarh (Baluchistan), man started domestication of animal and agricultural

activities. For storing cereals, they started making pots, and thus a big technological revolution took place, that is invention of potter's wheel. In this period man made tools of polished stone. Neolithic tools have been found from Burzahom in Kashmir, hills of Assam, Vindhya hills, etc. In the end of the Neolithic period use of metals started, along with stone implements. This period is known as the Chalcolithic period. The first metal to be used was copper. It followed the Bronze Age, that is the age of Harappan culture. They made tiny tools and weapons, both of copper and stones. Copper was locally available as is found in the case of Ahar and Gilund in Rajasthan. People living in Ahar used to practise smelting and metallurgy. Vast number of copper hoards has been found from West Bengal, Orissa, Gujarat, Haryana, Andhra Pradesh, MP and UP. They also used various types of painted pottery. They are examples of high technological skills.

People of Harappa made wide use of bronze by mixing tin with copper. Khetri in Rajasthan had vast mines of copper. Tin was perhaps brought from Afghanistan. Tools, weapons, images, and utensils of various types from numerous sites suggest that there were a number of groups of craftsmen who had got mastery in metallurgy and craftsmanship. It was the first phase of urbanisation. The making of Harappan towns by use of dried and burnt bricks on a uniform and standard pattern is the example of an advance technology. Town planning at Harappa, Mohenjo-Daro, Kalibangan, Lothal or at other places was done by appropriate knowledge of civil engineering, masonry, and architecture. Houses were arranged on grid system, and roads were straight and cut one another at right angles. The floors of bathrooms were made of burnt bricks, from where water flowed down to outside drains. Outer drains were covered by brick plates. The Great Bath and Great Granary at Mohenjo-Daro must have been built with a clear knowledge of geometry and masonry. They used weights and measures for commercial transaction. Their weighing objects of cube sizes made of grey chert are in the multiples of 16; for example, 16, 64, 160, 320, and 640. They have been found from Punjab, Sind, south Baluchistan, and Markan. But we cannot exactly say about its mathematical value of that period. However, the ratio of 16 is striking as this pattern was followed even in the modern times. The Indus people also divided length into decimal, for example, a 'foot' of about 13.2 inches and a 'cubit' of about 20.6 inches. "It is clear from the planning and architecture of cities that there was a competent knowledge of simple geometry and surveying." Pre-historic technology was simple, but practical.

4.2.2 Science and Technology since the Vedic Period

Since the Vedic period a new phase of scientific knowledge began which can be divided into cosmology, astronomy, mathematics, physics, and medicine. But Vedic science was based more on speculation and philosophy. However, the Vedic people applied their mind for new technological advances. The sources of study for development of science and technology during that period are the Vedas and allied texts, such as the Vedanga. The other important sources are Kautilya's Arthashastra, the Sulva Shastra, the Charak Samhita, the Surya Siddhant, and the Puranas. They throw light on the development of scientific principles and technology in ancient India.

4.2.2.1 Cosmology

As a branch of astronomy, cosmology studies the origin of universe and its structure. The Vedic cosmology is not simply the study of an outer universe but its connection with the inner world. It is a combination of mind and matter. Different branches of Indian philosophy such as the Sankhya and Vaisheshika, and the Puranas, particularly the Bramhanda Purana and Vishnu Purana, relate the creation of universe by interaction of different matters. The universe has phases of origin and decline; thus, it is cyclic. It has been termed as 'Brahmanda', divided into twenty-one regions. It hangs in empty space. There are several other universes, separated from one another. The earth was conceived as flat, but this idea was later on corrected by the astronomers; when they came to the conclusion that the earth is spherical. Much later, Brahmagupta in the 7th century CE calculated earth's circumference as 5,000 yojanas. According to the modern calculation, "this figure is not far out, and is as accurate as any given by ancient astronomers."

A very important part of ancient cosmology is the "Meru cosmology" in which the mountain Meru was supposed to be in the centre of the earth around which lies seven continents, separated by oceans. The Jambudvipa is the main continent in the middle of which is the golden Meru Mountain. This description appears in the Puranas, and is narrated to locate the situation of Bharatvarsha, which lies to the south of Meru Mountain. This idea continued to dominate for years and later on very severely criticised by the western scholars. Apart from the ancient Hindu texts, the Jain and Buddhist literature are also fundamentally of the same opinion in this cosmological principle. But the main contribution of Jain and Buddhist philosophy is

the doctrine of atomic theory, or the parmanu siddhanta. Grouping of atoms forms the molecules, which further form the elements. All matters are formed out of four elements- fire, air, water, and the earth. In it was added, later on, the fifth 'non-material and all-pervading' material, akasha or space. This theory of formation of cosmic world is also described in the Vaisheshika philosophical system. This atomic theory is purely an Indian theory, independent of any foreign influence.

4.2.2.2 Astronomy

The main source of ancient Indian astronomy is the Jyotisha which is one of the six parts of the Vedanga. The purpose of ancient astronomy was to study and calculate the position of new and full moon in relation to nakshatras and the sun, and to prepare a calendar. The Atharva Veda lists the names of twenty-eight such *nakshatras* or constellations in a hymn. The nakshatras are supposed, to bring, as the Vedic people thought, good omen and prosperity. The enumeration of these constellations is attributed to ancient sage named Garga about whom references are in the Mahabharata and in the Vishnu Purana. He was an astrologer of Arjuna. This science of stars, according to a later scientist Varahamihira, passed from one sage to another. The Garga Samhita which contains the teachings of Garga was possibly composed in the beginning of the Common Era, and it is the main source for Varahamihir's Vrihat Samhita. The number of constellations is twenty-seven in the Taittiriya Samhita and Satapatha Brahmana. The Rig Veda also mentions some of them.

The science of observing the position of stars and calculating the time were meant for various religious sacrifices performed by the early Vedic people. They knew about the movement of the sun and moon in the ecliptic path, and fixed their positions by noting their proximity with a particular nakshatra. This astronomical knowledge was first systematised in the Jyotisha Vedanga composed by Lagadha, probably in 900 BCE. In the astronomical system of the Jyotisha Vedanga, the twenty-seven nakshatras or constellations are marked as twenty-seven divisions of the ecliptic, according to the position of the sun and the moon. On its basis the time period has been divided from smallest unit to the biggest. Thus, a cycle of five years is called a yuga, consisted of 1830 days, and in this way a year is of 366 days. Next, the year is divided into twelve months, each of thirty days. An extra month, which is left, is inserted during the period of one yuga. A year has six seasons of two months each. Days are divided on the basis of a particular season. A day is consisted of thirty

muhurtas; one muhurta is equal to twenty-two nadikas; and one nadika is equal to 10 and $\frac{1}{20}$ kalas. Thus, in a day, from sun rise to the next sunrise, there is 603 kalas.

In the same way, a lunar month is also divided. It is a period between two new moons of 29 and $\frac{32}{62}$ parts days. A lunar day or tithi is less than a solar day. In five solar years there is sixty-seven lunar months.

From fifth century to the middle of twelfth century a brilliant phase of Indian astronomy can be seen. During this period host of astronomers contributed in the field of astronomy and allied sciences. Some of most important ancient scientists were Aryabhata I, Varahamihira, Brahmagupta, Bhaskara I, Aryabhata II, Sripati and Bhaskara II.

Aryabhata was born in 476 CE near modern Patna. He has served as the head of the ancient Nalanda University. He was a great mathematician and astronomer. His major work on mathematics as well as astronomy is known as *Aryabhatiya*. Another work of Aryabhata is *Arya-siddhanta* which is a lost work. Its references are found in the works of later period astronomers, such as those of Varahamihira, Brahmagupta and Bhaskara I. In astronomy, Aryabhata proposed new observations while contradicting with the old theories. For example, in the first chapter of the *Aryabhatiya* he writes that the earth rotates about its axis daily round the Sun, and he counts the beginning of day from sunrise. He also gives the number of its rotations in a *yuga*. The apparent movement of stars is a relative motion caused by the rotation of the earth. He developed a type of geocentric model of solar system in which motion of planets are each governed by two epicycles (it means, 'a circle in which a planet moves and which has a centre that is itself carried around at the same time on the circumference of a larger circle'), a smaller and a larger. He also placed the other known planets at that time according to their distance from the earth like this- Moon (*Chandra*), Mercury (*Budha*), Venus (*Shukra*), the Sun (*Surya*), Mars (*Mangala*), Jupiter (*Brihaspati*), and Saturn (*Shani*).

Aryabhata developed the most authentic theory of the lunar and solar eclipses. He rejected the old theory which said that eclipses were caused by Rahu and Ketu; however, his observation was that eclipses were caused by the shadow of the earth and the Moon. He even calculated the length and extent of the shadow of the earth which was later on found almost correct. He observed that the Moon was in fact dark, and it was illuminated by the Sun. He was almost accurate in calculation of the sidereal rotation of the earth and length of the sidereal year.

Varahamihira was a versatile scientist of the classical period who wrote on astronomy, astrology and on agriculture. He was son of Aditya Das and was born in the present day Malwa (MP). He had lived and worked in Ujjayini in Madhya Pradesh in the later part of fifth century. He died in 587 CE. His most important works are Brihata Samhita and the Pancha-Siddhantika. The first one is a very vast book in which he writes on a variety of topics such as astronomy, planetary motion, eclipses, astrology, mathematics, seasons, rainfall, and agriculture. The Pancha-Siddhantika is based on the previous five astronomical works, namely, Paulisa Siddhanta, Romaka Siddhanta, Vasishtha Siddhanta, Surya Siddhanta, and Paitamaha Siddhanta. Among the five, only Surya Siddhanta survived till date. Varahamihira is said to have updated the previous five works on the basis of Aryabhata's theories.

Varahamihira main contribution in astronomy is the division of time from bigger to the smallest units such as ages, years, half years, months, half months, days, muhurtas, ghatis, palas, pranas, vipalas, pratipalas, etc. He divided months in four kinds- solar, savana, sidereal, and lunar. He ascertained distance of each planet from the earth measured in yojanas. His astronomy is 'mathematical astronomy.' The Surya Siddhanta assumed geocentric system of the universe, and 'longitudes reckoned from the prime meridian through the ancient city of Ujjayini.' On the shape of the earth his assumption was that it is globular, but he wrongly regarded it as an 'immovable sphere fix at the centre of the universe.' It was contrary to the earlier view of Aryabhata.

Brahmagupta was basically a mathematician. He was born in 598 CE in Multan. In 628 he composed a treatise known as Brahma-Sphuta-Siddhanta which was based on and corrected form of Paitamaha Siddhanta. His Brahma-Sphuta-Siddhanta deals with a variety of subjects such as algebra, arithmetic, geometry and astronomy. While composing his work, he went through the views of previous mathematical works, and also the Puranas. He is known for giving the concept of *zero* in algebra.

In astronomy, Brahmagupta gave methods for calculation of motions and places of planets in the universe, their rising and setting, and calculations of eclipses. He criticised the views of Puranas on the shape of the earth to be flat; and on the observations of various stars, he proposed that the earth is round in shape. One of his major observations was the gravitational force of the earth. He said that "all heavy objects fall down on it by the law of nature; for it is in the nature of the earth to attract and keep things, just as it is the nature of the water to flow." But wrongly, he denied,

like Varahamihira, that the earth rotated. Here he differed with Aryabhata who had the most accurate idea on the rotation of the earth.

Bhaskara I, a mathematician and astronomer of 7th century, was follower of Aryabhata. He composed two astronomical works namely, Mahabhaskariya and Laghubhaskariya, and also wrote a commentary Aryabhatiyabhashya. Eight chapters of Mahabhaskariya deal with mathematical astronomy like longitudes of the planets; solar and lunar eclipses, rising and setting of planets and their association with one another.

Bhaskara II was a great mathematician and astronomer of 12th century. He was born in Bijapur, Karnataka, and was leading a cosmic observatory in Ujjain. His main work is Siddhanta Siromani which has four parts- Patiganita or Lilavati (on arithmetic), Bijaganita (on algebra), Grahaganitadhyaya and Goladhayaya (both on astronomy). Grahaganitadhyaya is based on the Surya Siddhanta. He used astronomical equipment for study of planets and stars.

4.2.2.3 Physics

Ancient Indian ideas of physics were based on different schools of philosophy of the Hindus, Jains and Buddha. They deal with the origin of universe and planetary bodies, and find out five essential elements- earth, air, fire, water and ether (akasha) - in their formation. The five elements have definite attributes related to sense organs. Thus, the attribute of earth is smell, of air is feeling, of fire is vision, of water is taste, and of ether is sound. The Buddhist and Ajivika thinkers did not accept the existence of ether. They thought two feelings, joy and sorrow, as elements. Jain accepts akasha or ether.

A big contribution of ancient Indian scientists is the development of atomic theory in relation to elements. The earliest example is found in the teachings of Pakudha Katyayana, a contemporary of Buddha and Mahavira. In fact, Pakudha Katyayana was the founder of Atomism Philosophy in ancient India who recognised seven elements- earth, water, fire, air, joy, sorrow and life. These elements are “unmade, irreducible, uncreated, without a creator, barren, stable as a mountain-peak, standing firm like a pillar.” He is compared with Empedocles of Greece who had also proposed the four elements, air, water, fire and earth. But, as accepted by all, there was no impact of Greek philosophy on Indian atomic theory.

Other schools of philosophy also accept material cause behind the creation of universe. Charvaka, for example, says that the world is created by the combination of

four elements- earth, air, water and fire. He does not accept existence of ether. Such elements are also behind the creation of living things. The combination of four elements brings life and consciousness. Charvaka does not accept role of any other force, such as God, in the creation. So, it explains the physical world purely on materialistic theory. The Jain also explains theory of substance and atom. In Jainism, a matter is called as pudgala, which is divisible and can be combined together. *Anu* or atom is the last part of matter which is indivisible. Two or more atoms make *skandhas* or compound.

The Vaisheshika school of Philosophy, which was founded by Kanada in 3rd century BCE, also propagated atomic theory of creation. Along with the four elements - air, water, earth, and fire - it also accepts the fifth elements i.e. role of god in the creation. He also attributes certain quality of each substance. The atom, of which the matter is made of, is eternal and invisible. 'A single atom has no quality, but only potentialities.' Atom is activated with the combination of other atoms. A. L. Basham writes, "the Vaisheshika School, which specially elaborated atomic doctrines, and was the school of atomism *par excellence*, maintained that, before combining to form material objects, atom made primary combinations of diads and triads." The Buddhists and Ajivikas developed different theories in this regard. They thought that 'in normal conditions no atoms existed in a pure state, but only combined in different proportions in a molecule.'

There was no agreement among the Indian philosopher-scientists on nature of matter and on atomic theory. The most severe demerit of Indian atomic theories was that they were not based on much experiment, rather ancient physicists and thinkers based their knowledge on intuition and logic. Due to the lack of experiments, the science of physics remained as speculative science. But Indians made great advance in the science of acoustics because it was based on experiments. The recitation of Vedic hymns needed accuracy of pronunciation of each and every letter and word. A highly trained class of people in phonetics evolved such a sound system of music and sound as are considered perfect even today. They classified octave, means series of tones, into twenty-four srutis of quarter tones, and measured their proportion.

4.2.2.4 Chemistry and Metallurgy

The knowledge of chemistry is related to the knowledge of various elements, to prepare extract of them and their mixing to make new compounds. Indians had learnt, from the ancient time, the art of mixing different elements to make colours,

perfumes, acids, alkalis and medicines. This is evident from the discovery of various types of coloured pottery, seals, beads, bricks, copper and bronze objects, coins, paintings, sculpture, clothes, implements and many other things right from the pre-historic period to the end of ancient period. This knowledge was based purely on experiments, and can be said to be most useful in day-to-day life. Charaka Samhita, which is one of major medical texts, has a chapter on *rasayan shastra*, means chemistry; *rasa* means extract of a substance. It also mentions about chemical laboratory where experiments were made. In the period of Ayurveda, the need for herbal drugs, acids and alkalis speeded the knowledge of chemistry. We find reference of anaesthesia, perhaps herbal wine, during surgery in Sushruta Samhita, one another book on ancient medicine.

Ancient Indians made various types of things by their experiments. Kautilya's Arthashastra and Vrihata Samhita mention about making of glass. Glass was also coloured. Glass objects have been found from Maski, Hastinapur, and Taxila. Perhaps there was a glass factory at Kopia in Basti district of UP.

Manusmriti and Yajnavalkasmriti mention about a soap like substance called *phenaka*. However, the ancient people used certain types of plants and their fruits to wash clothes. In the Atharva Veda there are frequent references of dying materials like madder, lac, and safflower. In Vrihata Samhita there are references of different types of cosmetics and perfumes. Ink was also in wide use, most particularly from the 4th century BCE. They were widely used in inscriptions. Ink was made from nuts and myrobalans. Some other types of ink made from chalk and red lead were also used. In the Jain scripts ink made of roasted rice, lampblack, sugar, and some plant extracts were used. Herbal liquor was in use since the time of the Rig Vedic period, as we get wide references of *somas* in the text. It also describes the methods of preparation of *soma*. The Arthashastra also lists different types of liquor such as medaka, Prasanna, asava, arista etc. From the excavation at Taxila the source of earliest distillation of liquor has been found.

The knowledge of chemistry continued to grow throughout the ancient period. Nagarjuna, the 8th century CE Buddhist philosopher and alchemist, is a great name in this field. He composed a treatise known as *Rasaratnakara* which is a popular book on alchemy. It deals with the preparation and use of metallic components, particularly mercury which he names *rasa*.

In fact, the knowledge of chemistry and metallurgy was very old. The people of Indus civilization were acquainted with the use of bronze which they made by mixing tin with copper. It was done by a class of craftsmen who used a special type of kit for manufacturing bronze objects such as images, utensils, and weapons. They also made gold and silver jewellery. Their pottery was painted with various designs and colours. Stone works were equally developed as is viewed by their town planning and existence of great brick structures. The Indus people used gypsum cement in the construction of well in Mohenjo-Daro.

The Vedic Aryans used iron implements and weapons which suggest that they had acquired a good knowledge of smithery and smelting around 1000 BCE. They also used copper objects as are found from the Painted Grey Ware sites. Their pottery was painted in black and red, grey, or red colours. They made glass bangles. During the Mauryan age, use of iron increased very much as the Mauryan kings had got access to the iron-ores mines in the eastern India. They also developed the knowledge of iron technology steel-making. The Arthashastra of Kautilya gives information on metal ores and mining, and several types of technologies. War materials and different types of war related yantras or contrivances get predominance in the Arthashastra.

In the post-Mauryan period, there was new development in material culture and technology due to the contact with Central Asians such as the Indo-Greeks, the Shakas, the Parthians, and the Kushanas. Wearing of long boots, trousers, leather shoes, and use of stirrup came with them. Glass industry also progressed with their coming. This was the period of cultural exchange by which both sides benefitted from their mutual knowledge of science and technology. In the classical period of the Gupta rulers the progress in this field was versatile. Craftsmen had got expertise in their works due to advanced knowledge of metal technology. Many bronze images of Buddha and gold coins of the period are good examples of the new technology. The iron pillar of Mehrauli in Delhi was manufactured in the fourth century CE during the Gupta period. It is the finest example of technological skill in the sense that even after so many years has passed but it has not captured rusting.

In fact, the knowledge of chemistry was related to day-to-day life of the common people. The craftsmen and chemists made things for common uses. This is the reason that the knowledge of chemistry continued to develop throughout the ages.

Check Your Progress I

How was the pre-historic technology?

What was 'Meru Cosmology?'

What was the significance of nakshatra?

Name the books of Aryabhata I.

Who was Pakhudha Katyayana?

4.3 Health consciousness (Science of Life): Ayurveda, Yoga and Naturopathy

Ayurveda, Yoga and Naturopathy were established forms of medical system in the ancient period in India. But due to rise of allopathy in the modern period, they went into background, and now Ayurveda, Naturopathy and many other ancient knowledge systems on medicine are known as alternative medicines.

In ancient India, there was consciousness for good health and well-being of people. People wanted to lead a good and long life, a life free from diseases and malady, for which they searched for remedies. Thus, health consciousness was the prime objective. This consciousness resulted in the foundation of different branches of medical systems such as the Ayurveda, Yoga and naturopathy.

4.3.1 Ayurveda

Ayurveda, means the 'Doctrine of Longevity', is regarded as the oldest medical system in the world. Its basics can be seen in the hymns of Atharva Veda and even in the Rig Veda which mention several types of ailments and their cure. Thus, the chief ailments mentioned in them are fever, cough, diarrhoea, consumption, dropsy, seizures, tumours, abscesses, skin diseases, leprosy etc. The Buddhist and Jain texts also describe about human sufferings from diseases. However, diseases were considered as a punishment against sins, and their treatments were performed by priests or shaman by means of magic and spells, and by observance of sacrifices. Such practices were common among the ancient people of the world.

Dhanvantari is regarded as the founder of Ayurveda. He was 'custodian of the elixir of immortality', and a divine figure. His name appears in the Susruta-Samhita. He has been given the place of 'god of Classical Indian Medicine.' Another semi-historical name in this field is Bharadwaja, who learnt the knowledge of Ayurvedic medicine from God Indra and taught it to other sages. The Charaka Samhita mentions

Bharadwaja as the first man who acquired the knowledge of Ayurveda medicine, and he taught this science to Atreya (800 BCE).

According to Rig Veda, Indra and Ashwini Kumars, the twin brothers, had the knowledge of medicine. Soma, a deity in the Rig Veda, is also regarded as God of energy and immortality. Soma was a kind of plant, the essence of which was extracted by churning, and it was consumed for long life. Drinking of *somas* relieved from a number of ailments. So, it has been termed as 'king of the medicines' as well as 'king of plants.' The Rig Veda gives methods of preparation of *somas*.

Atreya, son of the sage Atri, was a great physician and teacher. He lived, probably, in the 8th century BCE. His well-known work on Ayurveda is *Atreya Samhita*, which classifies diseases as curable and incurable. Atreya wrote on influence of climate on body, use of water in diseases, physical and medical properties of milk, plants, grains, fruits, herbs, honey, etc. Next, he describes various types of diseases and their cure. Charaka Samhita, which is revered by medical practitioners in India, is largely based on teachings of Atreya. His methods of teaching and practice were based on enquiry and discussions. So, it is said that "rational spirit in Ayurveda medicine began with Atreya." His famous disciples were Agnivesa, Bhela, Jatukarna, Parasara, and Harita. He tried to relieve medicine from the divine influence and looked disease as a natural cause. In this sense, he is compared with Hippocrates of Greece.

In the 6th century BCE, Takshashila University was a centre of study of medicine. Jivaka, the famous physician had studied for seven years at Takshashila. In fact, the period from 800 BCE to 800 CE is known as the 'golden period of Indian medicine.' During this period medicine was being studied rationally at the centres like Takshashila or Varanasi. For some time, Jivaka had practiced at Saket (Ayodhya). Then he came to Rajagriha, in the court of Magadha king Bimbisara who had raised him since childhood. He had treated the king for which Jivaka was appointed as the Royal physician. Jivaka had also cured the king of Avanti from Jaundice. He is said to have performed surgical operation of head and abdomen. He was closely associated with Buddha and his followers whom he had treated many times.

4.3.1.1 Charaka and Susurta

Charaka was the greatest of all physicians of ancient time. According to the French orientalist Sylvan Levi, Charaka was court physician of Kanishka in 2nd century CE. But many scholars disagree to him. He was the author of Charaka

Samhita, a vast treatise on Ayurvedic medicine. However, this book was actually a revised edition of Agnivesa's work, who was a disciple of Atreya. Charaka Samhita is so much revered by scholars of that time that its several commentaries were written till sixteenth century. It was a highly referred book in the Latin and Arabic world of medicine.

The Charaka Samhita laid down the whole principles and methods of treatment of Ayurveda. Its first part is the selection of desirous students to study medicine. Students were admitted only after acceptance of a number of oaths by them. They had to live life of a brahmacharya during the study period, and to work for the wellness of the people after completing the degree. The subject matter of Charaka Samhita was very vast, like today's medical course. It prescribed embryology, anatomy of human body, functions of the body organs, the three humours of body- wind, bile, and phlegm; aetiology, pathology, diagnosis, prognosis, treatment, and rejuvenation of body. Charaka Samhita studies human body from the conception in the womb, its stages of development and birth. In physiology it accepts the five elemental entities- earth, air, water, fire and ether, which also exist in the human body in the form of substances or *dhatu*s such as rasa, blood, flesh, fat, bone, marrow and semen. Food nourishes the dhatu and maintains equilibrium. In the Ayurveda, the role of three humours mentioned above has been accepted crucial in the functioning and mal-functioning of body. Their imbalance in body is the sole cause of diseases. Further, Charaka describes the methods of diagnosis by proper examination of patient. Lastly, he prescribes medicines or drugs according to the nature of disease. Ayurvedic drugs, mostly herbal, have been classified into fifty groups on the basis of their actions on body. Drugs were given in the forms of powder or drink or enema. The main purpose of Ayurvedic treatment was to bring back normal balance between the dhatu and the three humours or dosas.

Susrutawas the greatest surgeon of ancient India and often called as 'father of surgery.' He was born in Kashi. He, perhaps, lived between 800 and 700 BCE. His book the *Susruta Samhita* is regarded as a great work on surgery in the ancient world. Surgery in ancient India was known as *shalya chikitsa*. In ancient time it was a part of Ayurvedic treatment. Susruta was a surgeon as well as a teacher of medical science. He trained his pupils in surgery by the use of a number of surgical instruments. Susruta Samhita mentions about various types of instruments used in surgery, such as 'twenty types of knives and needles, thirty probes, twenty tubular instruments, and

twenty-six articles of dressing.’ Susruta Samhita mentions about operations of cataracts, hernias, piles, fistulas, fractures, and dislocations. However, Susruta’s major achievement in surgery was the plastic surgery of nose, operations of abdomen, cataracts, removal of urinary stones. Susruta Samhita was also known for study and classification of animal kingdom, worms, poisonous and non-poisonous leeches, medicinal plants and metals. So, it has rightly been said that, “the great advancement in surgery in Susruta’s time was far in advance of the contemporary surgery in other parts of the world and it remained so for many centuries.” His work has been translated into many languages.

Vagbhata is also regarded as a great Ayurvedic physician of ancient time. He lived perhaps in the 6th-7th century. He is credited with writing two books on Ayurveda- the Ashtanga Sangraha and Ashtanga Hrudaya. Other famous Ayurvedic physicians of ancient times were Madhavakar, Vrnda, and Dridhabala.

4.3.2 Yoga

Yoga is one of the most brilliant contributions of India in the realm of physical and mental fitness. Traces of Yoga can be seen as back as in the Indus civilisation. However, the basics of Yoga appeared in the the Vedic period. Yoga has both theoretical practical aspects. Here we are concerned with the practical aspect of yoga, as yoga is understood today. All medical practitioners suggest performing and adopting it for a healthy life. So, yoga today has become synonymous to some sorts of exercises. However, its basics are different, as they have been outlined in the ancient book of yoga, the Yoga Sutra.

4.3.2.1 Meaning of Yoga

Yogais a Sanskrit word which means ‘to join or to unite, symbolising the union of body and consciousness.’ It is an ancient science of physical and mental fitness as it is based on both the principles of mental concentration and physical activities. Yoga is both a philosophy and a way of life. It is one of the six schools of ancient Indian philosophy, namely nyaya, vaisheshika, Samkhya, yoga, mimansa, and advaita. The founder of Yoga darshan or philosophy was *Patanjal* who composed the *Yoga Sutra*. It is often combined with the *Samkhya* philosophy, and both are called as the allied systems. However, Samkhya is based more on the theoretical knowledge of the self, and yoga is based on the practical knowledge of physical and mental exercise leading to ultimate liberation of the soul. Other than the Yoga Sutra, references of

yoga can be found in many ancient literatures, for example in the Vedas, the Upanishads, and the Bhagavad Gita, the Puranas, and the Buddhist and Jain texts.

They all outline two aspects of yoga- spiritual aspect and practical aspect. The spiritual aspect of yoga is to combine oneself with god through meditation and right path. In the Gita, three paths have been mentioned for this- gyan yoga (the path of knowledge), bhakti yoga (path of devotion) and karma yoga (path of action). Buddhism and Jainism also accepts the importance of yoga for a pure and dedicated living and for true knowledge. Both the Buddha and the Mahavira had done intense meditation for years to get enlightenment. They were yogis in true sense as they had got control over their senses and liberated themselves from bondage of sufferings. Yoga, as is believed, was being performed even during the Indus civilisation. A few seals of Harappan period reveal this fact. In one of them a person has been shown sitting in yoga posture who has been named as pashupati.

4.3.2.2 Basics and steps of Yoga

Yoga is not simply some sorts of exercises as is understood today, rather it is based on an ancient guide book which outlines a number of steps to get fill benefits of Yoga. The Yoga Sutra is related both to the mental and physical control through certain number of practices. The aim of yoga as has been outlined in the beginning of the Yoga Sutra is “the intentional stoppage of all the spontaneous activities of mind, which by nature is in constant agitation like the surface of pond broken by a breeze. In order that it should stand still, it is necessary that all the sense impressions coming from outside as well as the stimuli from within should stop completely. When this is achieved the God stands revealed.”

The full benefit of yoga can be achieved by following eight steps. It is called the Eightfold Path of Yoga. These eight steps are as follows-

Yama – Yama is the first principle of yoga by which the outer and inner senses are to be self-controlled. Yama can be observed by following five ethics in life. They are- Ahimsa or non-violence; Satya, means truth; Asteya, means not desiring for others wealth; Brahmacharya means to keep away from worldly pleasure; and Aparigraha, means not to amass too much wealth. These are preparatory steps to achieve greater benefits of yoga. These rules are also mentioned in the Buddhism and Jainism for a good life.

Niyam- This is second principle of yoga. It outlines certain rules of conduct necessary to overcome egoistic impulses. It can be achieved by following five good conducts

namely shaucha or purity, santosh or contentment, tapas or penance, swadhyaya or self-study, and ishvara pranidhana means contemplation of God.

Asana – Asana is the third step. It is also known as yogasana which means to keep body in right postures. By performing certain number of asans body becomes healthy and it comes under control of its performer. In this step both mind and body are to be kept stand still.

Pranayama- Pranayama is the next step. In Pranayama breathing is regulated by means of deep breathing, holding the breath, or by releasing it. It should be done under the guidance of a yoga teacher. Pranayama helps in controlling senses and gives strength to mind and body.

Pratyahara –The purpose of this step is to keep senses away from outer pleasures and to get control over mind.

Dharana – Dharana is the first step in internal discipline. In dharna, mind is concentrated on one particular point. It helps in steadying the mind.

Dhyana – Dhyana means regular contemplation on an object. It helps in getting clear concept of the desired object which must be of good nature.

Samadhi – Samadhi is the last step of yoga. In this step the mind merges into the object of contemplation. Coming to this last step, the yogi overcomes his mind, body and his senses. Thus, the purpose of yoga is achieved as the meaning of yoga has been defined in the Yoga Sutra of Patanjali, that is, “yoga is the calming down the fluctuations of mind.”

The first five steps (yama, niyam, asan, pranayama, and pratyahara) are preparatory steps to reach dharna, dhyana and samadhi. By following all the steps in true sense, the actual aim of yoga can be achieved, that is, to join or unite with the desired object. In the philosophy of yoga, the last desired aim is to get moksha or liberation from bondage of sense organs.

In the ancient period, yoga was adopted along with Ayurveda as a practice for physical and mental fitness. All the ancient medical scientists also recognised the significance of Yoga in prevention of diseases and in keeping the mental and physical fitness. It was based on tested principles. Along with Ayurvedic medicines they prescribed certain types of actions to follow for removal of diseases. Even today benefits of yoga are recognised by the whole world. Today various organisations and individuals are giving basic lessons of yoga to the masses. They display various types of pranayama and yogic exercises to be performed for physical fitness.

On 21st June every year International Yoga Day is celebrated since 2015 under the aegis of the United Nations. This day is celebrated to mark the contribution of India in advancement of knowledge for physical, mental and spiritual wellness through Yoga. All over the world India's ancient wisdom in this field has now been recognised.

4.3.3 Naturopathy

Naturopathy is another form of alternative medicine in the modern sense. In India, at present it is under AYUSH (Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy) ministry of the central government. It is an allied branch of Yoga. In naturopathy body is allowed to heal itself without a medicine. It is done by certain therapies such as cleaning the body through sun bask, massage, exercises and yoga, mud pack, fasting, enema, vegetarian food, and so on. It believes in the self-healing power of the body.

Men have lived in close association with nature in the pre-historic time. They lived long life without any formal system of medicine. It has been found that other creatures heal themselves. This may be the logic in support of naturopathy. The same may be true in case of ancient Indian people who developed Ayurveda as an established form of medical system supported by naturopathy.

However, the term naturopathy has its origin in two Greek words, 'natura' and 'pathos', means natural healing. In modern times, naturopathy became a movement for wellness without drugs. The term naturopathy was coined by John Scheel in 1895 in U.S.A. Having been influenced by the western movement for 'new science of healing' that is naturopathy it was revived in India too. In fact, it was an old tradition of India for wellness of body.

Ancient literatures, including those on medical sciences, amply prescribe for maintaining hygiene and personal cleanliness for a healthy life. It was an essential part of naturopathy. Manu, the author of Manusmriti, prescribes a number of sanitary codes which include 'practice of early rising, cleansing the teeth, anointing the body, bathing, exercise, shampooing, and rubbing the body.' One should maintain moderation in taking food; it means eat only as much as the body needs. Manu prefers only two meals a day, and not to full the belly, thus let digestion go smoothly. One should rinse mouth before and after meals. Physical exercise and massage with oil keep body healthy and away from disease, as a saying goes, "As serpents never go near an eagle, so diseases do not approach a person who is in the habit of taking

physical exercise and anointing his limbs with oil.” It has been said that “to accelerate the mind, cure diseased phlegm, wind and fat; to diminish fatigue, increase internal heat, and bring on sleep.”

Such guidelines for a healthy body have been prescribed by all medical practitioners of Ayurveda. Atreya, in 8th century BCE had acknowledged the benefit of drinking plenty of water to cure disease. He has also outlined the properties of milk, plants, grains, fruits, herbs, and honey which could heal certain diseases. Ayurveda referred herbal drugs, water therapy, mud therapy, and enema as natural therapies to cure body from diseases. Moderation in life was thought to be key to a healthy life. Thus, in naturopathy fitness of body is maintained just by following certain healthy codes and being moderate in living.

In modern times, when medical expenses are becoming too big, observance of certain healthy habits and home remedy, as prescribed in our ancient knowledge system, can keep human beings away from a number of diseases. Our ancient sages had presented some of the beautiful and practical ideas regarding how to live a healthy life.

Check Your Progress II

What is the environmental theory related to decline of Harappan culture?

Name four hymns or suktas related to environmental conservation in the Vedas.

What do you mean by Ayurveda?

Why are Charaka and Susurta famous?

What are the basic steps in getting full benefits of Yoga?

4.4 Indian numeral system and mathematics

In mathematics, or ganit (the Indian term for mathematics) India’s achievements had been glorious. Here, the Indians surpassed all of their contemporaries. Indian mathematics was free from any outer influence. A. L. Basham also writes that ‘the world owes most to India in the realm of mathematics.’ Mathematics included arithmetic, geometry, and algebra combining astronomy and astrology, too. However, they were known by different names, for example, arithmetic was known as *anka ganit*. Sometimes it was also known as *dhulikarna* means work on dust. Geometry was known as *rekha ganit*, and algebra as *bija ganita*.

4.4.1 Geometry: The foundation of mathematics was laid down during the Vedic period. It was evident from the idea of preparation of altars for religious rituals and sacrifices. Before the Vedic period, the Indus people had also knowledge of mathematical rules and measurement of units. They made uniform structures, and used burnt bricks of standard sizes. They were using multiple of 16 in weight and measures. All such things give the idea of presence of certain mathematical rules. But due to the lack of literary sources, we cannot form any certain idea of mathematical rules during the Indus culture.

However, the Vedas, and their allied texts Brahmanas and Smritis throw light on ancient mathematics. The Aryans used to perform various types of religious rituals and sacrifices to propitiate their deities. They performed them at a particular time and in altars. To maintain accuracy of time, astrology was evolved; and for preparation of altars the mathematics. The Vedic altars had different names and shapes. Altars for daily sacrifices were named as garhapatya, havaniya, and dakshina. Some special types of altars were shaped like birds or animals, whereas others had geometrical shapes like circle, rhomboid or chariot-wheel. They were constructed by specially trained persons who had knowledge of geometrical rules. They needed different types of bricks at different levels of altars-making. The ancient texts known as the *Sulva Sutras*, which are parts of the Kalpa Sutras (a part of Vedanga), deal with the construction of altars. There were seven Sulva Sutras, the authors of which were Baudhayana, Apastamba, Katyayana, Manava, Maitrayana, Varaha, and Vadhula. Of them, the first three are of much importance. The Baudhayana Sulva Sutra, a part of the Yajurveda, is the oldest. Baudhayana evolved rules to make different geometrical shapes such as a square, circle, rectangle, rhombus and diagonal. Further, he made rules to combine different geometrical shapes, measure volumes of areas, how to transform a square into circle and circle into square, a rectangle into rhombus. Shatapatha Brahmana and Taittiriya Brahmana, which are earlier texts, also prescribe such rules.

The knowledge of geometry continued to grow in the later period, when the construction of monasteries and temples began on a large scale, particularly from 400 CE to 1200 CE. Thus, Brahmagupta in the 7th century CE advanced the knowledge of geometry by solving problems of right-angled triangle and of the circle including properties of cyclic quadrilateral. Indian cosmology is also based on certain geometrical properties.

4.4.2 Arithmetic: Indian numeral system progressed with arithmetic. Numbering of an object was known during the Vedic period. In astrology Indians had calculated the distance of the planets. It appears in very vast numbers. Large numbers were expressed in powers of ten and their factors. Time was also divided into smaller units. The Vedas, Brahmanas, Sutras, the Epics and *Lalitavistara* (a Mahayana Buddhist text) give references of such numerals. In a hymn of Yajur Veda, attributed to the seer Medhatithi, names of numerals occur in ten, hundred, thousand, million, and many millions, in ten and its multiples. In the 5th century CE method of writing numerals was introduced which is termed as the place value method. Its earliest evidence has been found sometime in 200 CE in the Bakshshali manuscript, written in the Sharada script, found from Peshawar. Later on, Indian astronomer-mathematicians like Aryabhata, Varahamihira, and Jainabhadra Gani also used the place value method of writing numerals. This is the most modern system in numerology.

The most important contribution of Indian mathematician in this numeral system was the introduction of zero symbols beyond nine, and fixing of places of units, tens, hundreds, and so on. Thus, numbering system was much simplified and so multiplication and division of numbers became easier. Later on, this numeral system was termed as the Hindu-Arabic numeral system because in the eighth century it reached Baghdad, from where it reached to Syria, and finally to the Europe. Thus, through the Arabians the knowledge of Indian mathematics was known to the whole world. It has rightly been said, “The system of decimal place-value notation of writing numerals is an Indian contribution to the world of mathematics and is reckoned as one of the greatest inventions of all times.”

4.4.3 Algebra: The foundation of algebra or bijaganit was laid by a great mathematician of ancient India known as Aryabhata I. You have already been acquainted with his contributions in astronomy. He was the author of *Aryabhatiya*, a book on Indian mathematics and astronomy. It has four parts- first, *Dasagitika* which describes ‘system of expressing large numbers in Sanskrit alphabets’; second part is *Ganita-pada* which is mainly on mathematics; the third part is *Kalakriyapada* which deals with calculation of time; and the fourth part is called *Gola-pada* which is on astronomy. He also calculated the value of π (pie) as 3.1416 which are almost correct. He expressed numbers by means of syllables or alphabetical notations. Thus, large numbers were represented in alphabetical notation. It made easier the arithmetical and geometrical solutions by equations method.

The knowledge of algebra and arithmetic was further developed in the 7th century by *Brahmagupta* who had written a book on such subjects known as *Brahm-Sphuta-Siddhanta*. He was ‘stronger as a mathematician.’ There is a separate chapter, *Kuttakadhyaya*, on algebra in his book. He is credited to deal with zero and its operation for the first time. Thus, he mentioned, “zero subtracted from a negative or positive quantity or zero would furnish a negative, positive, or zero respectively. Zero multiplied by a negative, a positive or zero would furnish zero.” He gave rules for solution of simple and quadratic equations and even surpassed Aryabhata in solving equations. He also used algebra for astronomical calculations. In arithmetic Brahmagupta solved not only simple calculations like addition, subtraction, multiplication or division but also solved problems of square root, cube, cube-root, and fractions.

In the 12th century, the mathematical knowledge was further advanced by *Bhaskara*. *Lilavati* on arithmetic and *Bijaganita* on algebra are parts of his great work known as *Siddhanta Siromani*. *Lilavati* is regarded as a great work on arithmetic which is based on the works of previous mathematicians. It deals with weights and measures, simple calculations, square and square roots, cube and cube roots, fractions, and intermediate equations of geometry. Modern algebra is largely based on Bhaskara’s *Bijaganita*. He used abbreviated notations in mathematics. *Lilavati* was translated into Persian during the time of Mughal king Akbar and *Bijaganita* during the time of Shah Jahan.

4.5 Let Us Sum Up

After going through the descriptions on ancient Indian science and technology in the preceding pages it can be summarised that the ancient Indians were not only concerned with the spiritual aspects of life, but they also developed such philosophies as could become practical in day-to-day life. Their contributions in the realm of science, technology, and medical sciences are result of those thought processes. In the realm of cosmology and astronomy their knowledge was based on observation, rather than on experiments. So, they are not as true as the modern science might be. However, ancient scientists like Aryabhata I, Varahmihira and Brahmagupta propounded some of original theories in astronomy which are still relevant. Similarly, in the realm of physics they were able to give some ideas about the properties and compositions of a substance. The concept of atomic theory was one of the few original concepts given by Indians. There was no comparison of Indians knowledge

on mathematics. The whole world owes India's contribution in giving the concept of zero. They utilised their knowledge for practical purposes and made all sorts of things needed for comfortable living. This can be judged from the point of view of the advancement of material progress in ancient times. On the other hand, Indians were equally concerned about the protection of environment, which are reflected in their attempts to protect it. One of the greatest achievements of India can be found in the realm of medicines. They produced some of the original works on medicines and surgery, which are still regarded as base books to understand ancient medical system. The whole acknowledges India's concept of Yoga by following which one can lead a life free from physical ailments and mental stresses.

4.6 Key Terms

Brahmand - Indian term for the Universe

Nakshatra - Indian term for constellations

Rasayan-shastra – chemistry, as mentioned in Charaka Samhita

Mahavan, Srivan, Tapovan – classification of forests according to their utility

Ayurveda – Doctrine of Longevity, ancient medical system of India

Shalya chikitsa – Indian term for surgery

Dosas – three humours of body, namely wind, bile and phlegm

Pranayam – regulation of breathing for mental and physical fitness

4.7 Questions and Answers

4.7.1 Short-Answer Questions

1. Write a short note on ancient Indian cosmology.
2. Discuss the contributions of Aryabhata I and Varahmihira in Indian astronomy.
3. Write a short note on ancient astronomers of India.
4. Discuss the contributions of ancient Indians in physics.
5. Discuss the contributions of ancient Indians in the field of chemistry and metallurgy.
6. Discuss the Vedic thought for environmental conservation.
7. Write a short note on ancient forest policy in India.
8. Discuss the basic features of Ayurveda.
9. Write a short note on naturopathy in ancient India.

4.8.2 Long-Answer Questions

1. Discuss the contributions of ancient Indians in astronomy.
2. Discuss the development of science and technology in ancient India.

3. Discuss the Indian views and efforts regarding environmental conservation.
4. Write an essay on Ayurveda and Yoga.
5. Discuss the contributions of ancient Indians in mathematics.

4.9 Further Readings/Suggested Readings

- A. L. Basham, The Wonder That Was India
D. P. Chattopadhyaya, Science and Society in Ancient India
H. C. Bhardwaj, Aspects of Ancient Indian Technology
R. Verma, Idea of Bharat
Romila Thapar, History of Early India
Suresh Soni, India's Glorious Scientific Tradition
S. Biswal and B. L. Ray, Vedic Science and Technology

4.10 Answers to Check Your Progress

Answers to Check Your Progress I- 1. See. 4.2.1; 2. See. 4.2.2.1; 3. See. 4.2.2.2; 5. See. 4.2.2.3

Answers to Check Your Progress II- 1. See. 4.3; 2. See. 4.3; 3. See. 4.4.1; 4. See. 4.4.1.1; 5. See. 4.4.2.2