UNIT - I	
PART - A	
1	**Explain how Palandamizhar learned the art of weaving.**
	The people of that time learned the art of weaving by observing the coconut tree's cocoon, the spider's web, the ability of birds to build nests, etc.
2	**Establish how Sangam people cleaned cotton.**
	They removed the seed, unwanted dirt etc. from the cotton and cleaned the by beating using tools like bow and steel.
3	**Write a brief note on Paavotudhal**.
	The process of applying glue to the cleaned cotton yarn, rubbing it well and smoothing the yarn to prepare it for weaving is called paavotudhal.
4	**What is a loom? State its types.**
	The wooden tool used to weave the dyed clothes is called 'loom'. Its types are loom weaving, finger weaving, upward weaving and downward weaving.
5	**What are the parts of a loom?**
	Achumaram, padumaram, vizhuthu, kambu, kuthukhambhi, kalpalagai, odam, oodaikula, pau etc. are the parts of the loom.
6	**Write about clothing business**
	The people of that time who were engaged in the weaving industry took their woven clothes to public gathering places, shops, domestically and abroad and sold them.
7	**Which are the places where the dye factories used to dye clothes were located in Sangam Tamil Nadu?**
	Arikamedu and Vrayyur.
8	**Write a note on Mudhumakkal thazhi**.
	One of the practices followed by the people of the Sangam period was 'Mudumakkal Thazhi'. Thazhi means big earthen pot. Therefore, after death, the pot used for burying the dead body inside a large earthen pot was called old man's dhaji.

9	**What are the other arts related to pottery**?
	Arts related to pottery include music, education, painting, sculpture, medicine etc.
10	**What are the musical instruments made of soil?**
	Flute, Nathaswara, Mritanga, Thalappanai, Mandugu, Udukai.
11	**What is the use of soil in painting?**
	Clay is used as a mixing material in painting. The potters in rural areas use clay to paint idols such as shrines and horses. Semman has also been used as a coloring compound for the walls of temples and houses.
12	**Write in brief about the medicinal properties of the soil.**
	Mud is used as medicine in Siddha medicine to remove headache, eye disease, body heat, hand and foot swelling, hair loss, dandruff, itch, scabies, etc.
	PART - B
1	**Explain and write about the weaving industry in Sangam age of Tamils**
	Introduction The ancient Tamils have followed weaving technology as an art form. People have known cotton spinning, handloom and sewing since ancient times. Tamil weaving refers to the technology and involvement of Tamils in this sector. This article aims to explain the news about the textile industry. **Weaving industry** □ Weaving industry or weaving technology is the technique used by the people to produce clothing, bedspreads, carpets and sacks etc. □ Each industry is famous for its areas of high supply of goods. Weaving technology includes operational techniques like cotton production, loom use, dyeing etc. So it is an antiquated technology. **Antiquity of weaving industry** □The people of that time learned the art of weaving by observing the palm tree, the spider's web, and the bird's nesting ability. □Weaving industry is a joint venture of many people. Garments are made through various steps. □ Artifacts found in the Indus Valley Civilization show that the ancient people knew the art of weaving cloth with cotton.

	Before the rest of the world became civilized, the people of India learned to produce cotton and weave clothes. **Cleaning of cotton** The people of that time cleaned the cotton punch by removing the seed, unwanted dirt etc. from the cotton punch and beating it using tools like bow steel. **Blasphemy** After applying glue on the cleaned cotton thread, rubbing it well and smoothing it, applying polish to the thread and setting it suitable for weaving is known as basting and drying. **Women spinning yarn** Women of the Sangam period were skilled at spinning yarn with cleaned panchin. Women who have lost their husbands have completed the economic needs of their families by spinning and weaving. From this it can be known that women were also involved in the weaving industry at that time. **Loom machine** The wooden tool used to weave the dyed cotton thread into clothes is called 'loom'. Loom weaving, finger weaving, upward weaving, downward weaving are the types of looms. Achuram, Padumaram, Vluthu, Kambu, Duthukambi, Leg board, Odum, Ooda tube, Bauu etc. are the parts of the loom. **Clothing business** The people of that time who took up the weaving industry carried their woven clothes to public gathering places, shops (shops), domestically and abroad and sold them. **Conclusion** Not only the literature but also the excavations have confirmed that the weaving industry flourished during the Sangam period. It is noteworthy that in the excavations conducted at Arikamedu, Vrayyur etc. dye tanks were found which were used for dyeing the textile industry. And this way we can know how the weaving industry has become special in the ancient times.
2	**Write about pot technology on historical basis.**
	The term pottery refers to objects made from clay. The art of making things out of clay is called 'Pottery Art'. Pottery art is very ancient and remains of culture. The results of 'Harappa, Moganjdaro' excavations confirm that pottery was in use by people centuries before the birth of Jesus Christ. A large part of the history of pottery is related to pre-historic and literate archaic culture. The history of pottery can be known only through the artefacts found in archaeological research.

	Pottery must pass through several stages before becoming part of a culture. The earliest pottery discovered in the study was found to be suitable for design and firing wherever clay was available. China dominates the pottery industry as it contains a wide variety of clays. Sufficient time is required to prepare, shape, kiln and mature clay pottery. So humans did not know how to make pottery until they lived in a fixed location. Pottery was developed only after humans specialized in agriculture and settled permanently in one place. Through this, we can understand the origin, development of the art of pottery, the development of fine art, and the status of Valachi with other arts.
3	**Establish how pottery in Sangam age of Tamil Nadu has been placed in literature and references.**
	Pottery usually refers to an object made of clay. Pottery is regarded as the oldest industry in the world. Pottery in Tamil must have originated in ancient times. The mention of ceramics in literary grammars suggests that they were in circulation centuries ago. In the fossil survey conducted at Athichanallur, burnt earthen thazhis and some artefacts were found in those thazhis. Mud is also oneamong the ten properties like black stone, brick, wood, clay, gold, silver, bronze, lime, mortar, clay etc. for making sculpture and art works. The quality and artistry of pottery have been well discussed in Sanga literatures like Puranahunu, Five hundred, Kurundogai and other literatures. Many pottery and sculptures made in the village of Krigiri in Vellore district of Tamil Nadu have been exhibited in the World Exhibition Road and have received appreciation. The black pottery made in Madurai is the best. Painted pottery is produced in Salem. In Nilgiris district in South India old paintings, animals, humans etc. are found with great art. Black and red pottery are made in Tamil. Ancient Tamil people made beautiful pots with the help of wheel. It can be known from some references that Malayalam villagers, Vedars in Sinhalese, African Negroes, Siberian Yaruts etc. made pots without the help of wheel. Black flint tiles and fragments of old people's talismans are found in large quantities in the area of Kielwalai in Villupuram district. All the above in AD. They belong to the 12th century. Therefore, it can be known that pottery has originated in Tamil Nadu many centuries ago.
4	**Write in detail the development and classification of pottery in Tamil Nadu**

	Development of Pottery The pottery industry must have passed through many stages before it became established among the people. Humans developed a method of making these when they practiced agriculture and settled in a fixed location. When examining the origin and development of pottery art in a broad perspective, its generality, development of fine art, its relationship with other arts etc. can be known. **classification** While studying the development of pottery art in Tamil Nadu, it can be classified as (1) general work (2) fine work. The former (1) provides life culture and the latter (2) art provides sense and pleasure. 1. **Public Works** Public art is a profession that is useful for human life. This art has become essential in the early days. Prior to the invention of pottery, people used to store water in gourds, rock cisterns, etc. It was only after the discovery of pottery that this art developed in utility. The pottery found among the agrarian population confirms this. Due to the development of science silver, lead, brass and other utensils are found today. Pottery was much in circulation before these. Some ceramics were used from the birth of man till his death. This art has developed in many stages as a general art that is useful for human life in many stages like drinking water, cooking food, eating, storing grains. 2. **Fine art** Works of artistic beauty, elegance and craftsmanship are called fine art works. Fine art, as distinct from general art, is historically backward. And it is worth seeing with the eyes and feeling with the mind. Man created fine art with his knowledge, attitude and imagination. He felt joy and spiritual fulfillment through the feeling he got from it. Glass is used to sip water and it is common art. It is a development of fine art that the neck, handle and mouth of the akkuvala are elaborately worked and artistically seen. This art has flourished in Tamil in the form of sculpture (god, human, bird, animal). Also, this art was developed and mastered due to the worship of minor deities in Tamil Nadu. Through the above evidences, it can be known that the folk handicrafts are the dynastic developments that came through the way and that they are still developing today along with the fine art skills like pottery design, painting, and art.
5	**Write and explain other arts related to pottery. (or) Establish that 'soil' is a precious repository for human life.**

Introduction

Pottery adds pride to rural handicrafts. Also, this art is seen as a pioneer of science in comparison with other arts. In this way, this article shows how this art was used for music, education, painting, sculpture, medicine etc.

Pottery and other arts

Pottery as forms of tradition,

a) Science
b) Pedagogy
c) Music
d) Painting
U) Sculpture
f) Medicine
A) Architecture

Here one can see the connection and benefit of other arts.

a) **Science**

By inventing the pottery wheel, this art is a precursor to science and serves as evidence for understanding the human race and civilization.

b) **Pedagogy**

Pottery is a precursor to education. Babylon and the Aryans used a writing system on pottery. They wrote on wet pottery. Clay was kneaded into small boards and before the moisture dried, they were written on with a nail-like tool and used as books. Through this we can know that clay has been used for education.

c) **Music**

Musical instruments like flute, nathaswaram, mridhangam (kadam), tambourine, manduku, udukkai are all made of clay.

d) **Painting**

He paints temple walls and houses with red clay. Clay is used as a mixing material for applying paints. Folk potters painted Sami idols, horses and other idols with clay.

e) **Sculpture**

Sculpting may have been done with clay before the development of sculpture. Idols were probably made of wood and stone before the discovery of iron. Although today idols are made with the help of cement, clay idols are considered to be the pioneers of idol making.

f) **Medicine**

Soil has some medicinal properties, cooking with earthenware is delicious and keeps the body cool by preventing diseases like ulcers. Headache, eye disease, fever, arm and leg weakness

6	**Establish that 'Adhichanallur' is an invaluable repository for archeology in the history of Tamil Nadu**.

Introduction

Adichanallur Archaeological Site is located in Tuticorin District. Adhichanallur is situated on the banks of the river Thamirapharani in the south-eastern part near Tirunelveli. It is one of the most excavated cities in the world. This article aims to bring out the special features of this city.

First Excavation

The first excavation was carried out in 1876 at Adichanallur. Jagor from Germany conducted the study. Then again in 1896, 1904 etc. As a result of these studies, the British archaeologist Alexander Rhea (Alexander) has named Adichanallur as the best archaeological site in South India. He has also discovered and recorded thousands of ancient objects.

Pottery, iron tools, weapons, jewellery, gold, bronze, rare stone, beads, skeletons etc. have been found here. Therefore, archaeologists consider Adichanallur to be the ancient cradle of ancient Tamil civilization.

Artifacts found in excavations

Excavations at Adichanallur have found a large number of idols. The burial ground block in this area is seen in three layers. Pits made of baked clay are buried in rocky hillsides. There are also burial mounds with two talismans covered by each other. Many talismans with ancient Tamil writings have also been found here.

Other items

Black and red pottery, red and black pots are found here. A female figure, rice husks, a deer and a lizard are depicted on a pot. Iron objects such as gold helmets, knives and swords and bronze objects have been found.

The culture of the people

According to the archaeological material found in Adichanallur, the culture of the people there is as follows by 'Kamil Suvilapil'.

- The people who lived in Adichanallur were warriors
- They learned to use horses
- These people knew how to smelt and cast iron and use it to make weapons.
- These people have worshiped deities like Murugan, Koravai etc.
- It is known that the culture of the people of Adichanallur was that they should have learned classical music and played the war drum as music in their rituals.

Ongoing Excavations

Five phases of exploration were carried out at Adichanallur in 1876, 1902, 1905, 2004, 2005 on behalf of foreigners and the Archaeological Survey of India. Currently, the 6th phase of excavation work, which is being carried out from June 2020 on behalf of the Tamil Nadu

	Government Archeology Department, has been ongoing since 25 May 2020. It is noted that the Government of Tamil Nadu has allocated 28 lakh rupees for this study. **Conclusion** With the above evidence, Adichanallur is a great treasure trove for archaeology. Also, we can learn about the industry and technology of the ancient Tamils
7	**Explain scratch marks on pottery and black red pottery.**
	a) **Black red pottery** The dot patterns pressed with an iron tool on the beautifully made earthen pot are very beautiful. Circles and semicircles are drawn in the middle of the base. Large and small bones, red bells, bronze bells, neck garlands, etc. have been found in burial pots called Thazhis. Most pottery is made of quality clay and fired in a kiln. They look beautiful in crimson, black color and black red colors. b) **Scratch codes** Rock paintings have been found in Tamil Nadu since prehistoric times. These belong to the Stone Age. These are seen in various forms like animal, human paintings, hunting scenes. Apart from this, symbols etc. paintings have also been found. These correspond to the writing found in excavations in the Indus Valley. In the excavation conducted by the archeology department, various drawings, paints, scratch drawings, colored drawing stones etc. have been found. The rock paintings gave birth to the later development of painting and sculpture. The artifacts found at the foot of the Sivaganga date back to 2200 years ago. Swastika symbols used as seals by the people of the Indus Valley have been found in Vadalur. Aiyan lake located in Vadalur, Cuddalore district, when it was cleared, black and red clay tiles and red colored tiles were found in abundance with historical remains. Also a trident like symbol is found here on a small earthen plate of black red color. c) **Archaic Symbols** Paleolithic people used symbols to express their thoughts. Excavations at places like Vrayyur, Kodumanal, Kulithalai, Thirkampuliyur, Nagai etc. have found potsherds inscribed with 'Swastika' symbols. These archaic symbols date back to a.d. were in circulation in the 3rd century. With the above evidence Adichanallur remains an inexhaustible treasure trove for archaeology. It is also a repository of precious antiquities. Through this article, we can learn about black and red colored pottery systems, which took shape as Tamil language symbols, and then gradually reached dimensions and took the form of lines.

	UNIT-II
	PART-A
1	**What are the materials used for building construction in ancient Tamil people?**
	Clay, wood, mud, bamboo, straw, grass and brick etc. were used for the construction work of that time.
2	**What are the three main elements found in Tamil architecture?**
	Bearing, wall, tower (plane).
3	**State the types of Palladian architecture.**
	Kudaivara temple, Kattali temple, and construction temple are types of Pallavar architecture.
4	**Write about 'karkali'**
	A temple structure that is built from top to bottom on a rocky or hilly part protruding from the ground is called Kattali.
5	**Who was the king who built the kallanai?**
	Cholan karikar peruvalathan
6	**Write about Pramandra Talakkal.**
	This magnificent stone is located at the top of Tanjore Gopuram. Made of one stone. It is 25 and a half feet square and weighs 80 tons.
7	**Write the name of Mamallapuram.**
	Once the Pallava king Narasimha, Mamallan, while out for a walk with his father, drew a picture of an elephant on a rock. It was only after seeing that that he got the idea of building a temple for his father. So he gave his name to the city.
8	**Which sculpture is an example of monolithic sculpture in India?**
	Pandava chariots located at Mamallapuram.
9	**Mention some of the Chola period temples**.
	Tanjai Periyakoil, Ariyalur Shivankoil, Peruvudayar Koil, Nellaiappar Koil, Kailasapati Koil etc. are Chola period temples.
10	**Who are the Chola kings featured in Moovarula written by Ottakoothar?**
	Vikrama Chola, Kulothunga Chola II, Rajaraja Chola II.
11	**Which buildings in Chennai are evidence of Indo – Sarocene architecture?**
	Chennai Ezhilak Building, Chepakkam Palace, High Court Building, Chennai University etc. are proof.

12	**Name some of the temples built by Nayak.**
	Madurai Meenakshi Amman Temple, Tiruvannamalai Annamalaiyar Temple, Kanchi Ekambareesuwar Temple etc.
	PART-B
1	**Write in detail about Sangam architectural design and constructions.**
	Introduction Various arts have flourished in Tamil Nadu for thousands of years. References to the arts abound in Sangha literature. Painting is the mother of arts and sculpture is its son. Temples of Tamil Nadu are a repository of sculptures. Arts in stone and copper are killing. This article explains about the design and construction of architecture, one of such traditional arts. **Architecture** Tamil architecture has enjoyed a special place since the Sangha period. Houses for people to live in, palaces, mansions and commercial buildings for kings were built during that time. Hence architecture as an art emerged in Tamil Nadu. Also, the kings who ruled the Tamilnadu regions in different periods were fascinated by the architecture, so new aspects were developed in the architecture of Tamilnadu. **Construction materials** In ancient times flint, wood, mud, bamboo, straw, grass and brick etc. were used in the construction works of that time. Later buildings were made of black stones. And they matured the clay and fired it in the kiln to build a solid building. Wood has been used as an excellent building material since then. **Bamboo** Bamboo is a strong and lightweight building construction material. Bamboo is used whole or broken. **Brick** Fired brick is a strong building material. It is used to make walls and other elements in building construction. **Structural Methods** People of that time constructed buildings according to their convenience. Before building the houses, there is a custom of setting up shop fronts at the chosen time. Foundation,walls, roof, plane or tower etc. are common features of Tamil architecture. Beautiful carvings were done in the houses so constructed. Various windows were fixed on the walls of the housefor ventilation.

	Ancient Foundation At that time solid foundation systems were designed to build buildings. Materials like lime and black pepper were used for that. They were able to create building structures that stoodthe test of time in a time when there were no engineering experts. That is because they made proper use of the natural materials that were easily available in the environment of that time. **Conclusion** Through the above evidence, the design and constructions of Tamil architecture can be known. It is also derived from this that the base, wall, tower etc. were the three main elements common to architecture at that time.
2	**Explain technical aspects and conservation of Tamil architecture.**
	Introduction Tamil architecture has a special place in architectural technique. This architecture was prominent in the south of India a thousand years ago. The finer aspects of that architecture, with temples as primary structures in the social structure, can still be seen widely in many South Asian countries including India, Sri Lanka, and the Maldives. So he can see the technology and safety of architecture. **Technical Features** Palandamir architecture is seen with great engineering details that amaze even the architectural expert of this time. The Palandamis have designed many types of beautiful looking windows in their houses. Then Tamil architecture developed during the Chola period and at the end of the 10th century temples were built on a large scale during the reigns of Rajaraja Chola and Rajendra Chola. Although they followed the architectural style of the Pallavas, they differed from them in various respects. The Cholas built many elaborate temples made of black stone. They also designed various public structures and developed architecture well. The height of Tanjore Gopuram built by Rajarasan is 216 feet. If that is the case, we have to calculate the depth and width of its footprint. The single stone at the top of Tanjore Gopuram is 25 ½ feet square. Its weight is 80 tons. It is called 'Pramandhra Talakkal'. How such a huge stone was lifted to a height of 216 feet in those days when there were no heavy lifting machines is a great wonder. The manner in which the people of that time constructed temples, palaces, forts, defense buildings, etc. using stone, wood, copper, iron, lacquer, etc. is an illustration of their historical excellence, cultural pride and engineering intelligence. **Architecture and Conservation** Like temples and palaces, the safe fortifications and their parts like moats and walls were well designed by the people of that time. And there is ample evidence that the Tamils excelled in building fort walls and defensive moats.

	Safety equipment Various types of security gates were installed on the high wall. They are, 1. Self-curling quivers that shoot arrows quickly 2. Forceps shaped like a black monkey 3. Catapult traps that throw stones 4. Traps that spill boiling oil on the enemy when he tries to approach 5. Iron smelting furnaces 6. Traps that tighten the neck of the enemy 7. Iron railings that push down enemies trying to climb the wall across the moat 8. Bait traps 9. Needle traps 10. Chain traps Silapathikaram, the first copy of Tamil, describes that various types of machinery werebuilt in it. **Conclusion** Through the evidences, it is possible to know that the people of that time had knowledge of engineering along with military engineering and that they used various technical strategies in their palaces as well.
3	**Establish with relevant evidence how the Pallavas erected rock structures.**
	❖ The Pallavar period was the period from 6th century AD to 9th century AD. It was during this period that the temple was first built in black stone. ❖ The Pallava period brought about a new vision in Tamil architecture. There were three types of their architecture namely Kudaivara, Kattali and construction temple. **Kudaivara Temples** ❖ Temples built on top of big mountains were called Kudaivara temple ❖ They constructed buildings in those days using non-durable wood, bamboo, straw, grass etc. ❖ They built buildings by digging out large rocks to construct buildings that could stand. ❖ Starting at one point of the particular rock and cutting the rock properly according to the construction design, the construction work will be abandoned if there is a crack in the Selvar rock. The quality of stones is ascertained through such tests. ❖ The temple structure is called Kattali, which is a rock or hillock that protrudes from the ground. ❖ Construction temples were built with stones in the beginning of the 7th century AD. The Mamallapuram Beach Temple is a fine example of Tamil temple construction and technique.

	Construction temples ❖ During the Chola period, Tamil architecture was well developed. Temples were built on a large scale during the reign of Rajaraja Chola Rajendra Chola towards the end of the tenth century. ❖ The Cholas followed the construction work of the Pallavas but differed from them in many ways. Cholas built many temples designed with black stones. ❖ 'Cholan Karikaal Peruvalathan' built the embankment of Cauvery and planted it for irrigation. After that the Vijayanagara kings established temples with architectural features in the south. According to the above evidence, the people of that time built temples and palaces by using stone, wood, copper, iron, lacquer, etc., dug hills and rocks. Fort defenses, structures, moats, walls, etc. can be obtained through this method
4	**Write about stage design for a play that is featured in Silapathikaram.**
	Introduction The word Silapathikaram is made up of two words Silampu and Akhtar. The story is called Silapathikaram because of the result of Silampuk. Its author is Ilangovadi. Other texts have the king or the gods as the leader of the song, but Silappathikaram has a citizen named Kovalan as the song leader, so it is also called Kappiyam by the citizens. This way he can see about the drama theater recorded by Silapathikaram. In one of the five epics, Silapathikaram, elements of music, music and drama, which are the roots of Muthamizh, can be found. It is also called 'Natak Kappiyam' as it contains the essential elements of drama. So this Silapathikara copy is very helpful to know the ancient drama trend. **Dramatic stage setting** Ilangovadi has recorded about the establishment of a theater two thousand years ago in great detail and detail in his Silapathikara copy. Yeniya noolor Iyalbinin vaazhaadhu Mannagam oruvazhi vaguthaar Kondu The (best) sculpture author who chose the above song has chosen a perfect place to set up the theater without changing the course. Wood selection In the high sacred mountains like Potiya Hill, the tall bamboos were cut down to a point where the knot is only a dream away.

	According to the scriptural protocol, the cut bamboo trunk was cut into a piece of bamboo measuring 24 inches (about four stanza) of the thumb of a well-grown average person. **pillars** They erected pillars on all four sides of the platform and fixed the order board on them. A board has also been installed on the stage. Between these two planks they are raised to a height of four goals (16 feet). **Two doors** This theater has two entrances for artists to enter and exit. **Paintings** On the top floor of the theater are painted images of the four types of Varuna Buddhas (Vachirathegan, Vachiratatha, Varuna, Rathakesura) for everyone to worship. **Lights** Illuminated lights are installed so that the shadow of the pillars does not fall in the hall and in the hall. This means that there were great architects of that time. **Curtains** The people of that time set up curtains coming from one side, curtains coming from two sides towards the middle, and curtains hidden from top to bottom etc. with beautiful style. They set up two types of screens, Porumuga Vehini and Karanduvaralezhini, and a canopy with paintings. All over the theater, famous pearl necklaces such as Sariyum, Thomum and Damam have been hung beautifully and have beautified the theater very much. **Conclusion** From the above evidence, we can know the importance given to the art of drama by the people of that time. And we also know that the theater of that time was set up with innovative and rare works
5	**What is Nadukal worship? Explain and write the news about it.**
	Archaeology, coins, painting, sculpture, literature etc. are used to know the history, customs, culture, civilization etc. of ancient Tamils. Among these, the inscription is unique. Continuation of the inscription is the 'nadukal' worship. **Nadukal** Palanthamigha has a custom of planting a nadukal at the burial place of the soldiers who did not retreat in battle, went forward from the place where they stood and died a heroic death. The way to do this is to take the Nadukal in memory of the dead hero. **Structure of mesentery**

	The places where Nadukal was planted have become temples over time. Worship is also held there. In front of the Nadukal, a stick and a knife are planted, oiled and garlanded. People used to clean the Nadukal with water and offer sacrifices with ghee, paddy, etc. On the day when the Nadukal was taken, the great glory of the hero was also written on the Nadukal, nadukal are widely located in Himachal, Kerala, Gujarat, Andhra Pradesh, Karnataka etc. in India. In Tamil Nadu, there are many Nadukal found at Sengam, Dharmapuri, Dhenkanikottai etc. More nadukalhave been taken during the period of Adhyaman and Chera, Chola and Pandya kings. In South India, 397 meridians have been found in the state of Karnataka, 22 meridians in Tamil Nadu and 126 meridians in Andhra Pradesh. It is noteworthy that in Tamilnadu, a Nadukal engraved with the image of a war cock was found not only for the men who died a heroic death. **Other Names of Mesentery** Medium stones are known as Vediyappan stone in Tiruvannamalai, Vellore, Tirupattur, Ranipet, Villupuram, Salem and Dharmapuri districts. The place where these are located is also known as Vediyappan Temple. **Inscriptions on epitaphs** The king's reign year, the name of the slain hero, news about him, what he was killed in and what he was killed in were engraved on the Nadukal. Most of the inscriptions are in circular form. Some are also in Tamil script. No epitaphs written in vernacular have been found so far. No Nadukal inscription of the Chola period is found in inscriptions. It is noteworthy that Tamil characters are used in many tombstones
6	**Explain and write the special features of Tanjore Great Temple.**
	The world famous temple of Thanjavur, known as the Great Temple, or Peruvudayar Temple, or Pragatheeswarar Temple, is situated on the south bank of the Kaveri River in Thanjavur. It is one of the largest temples built for Lord Shiva in India. This temple is a testament to the architecture of Palandamizhar and is one of the World Heritage Sites. Through this he can see the special features of the Great Temple of Thanjavur. **Rajarajacholan I** A symbol of the greatness of the Chola kings, the Great Temple of Tanjore was built by the Chola Emperor Rajaraja Chola I. The construction of the temple was started in AD 1003-1004 and completed in AD 1010. The inscription in the temple mentions that the chief sculptor of this temple is 'Kunjaramallan Rasarasab Perundhachan'. It is also noteworthy that this temple stands majestically even after a thousand years.

	Tanjore Great Temple Built by Rajaraja Chola I, the temple was initially called Rajarajeswaram and later Tanjore Peruvudayar Temple. It is also called 'Pragadeeswaram' during Maratha rule. The stones for building this temple were brought from neighboring states. ❖ The base of the temple is 5 meters (16 feet) high. Ichile is also the second largest Nandi in India with a weight of 20 tons. ❖ Features of the Temple ❖ The height of the Vimana atop this temple is 216 feet (66m). This is the art of the Cholas. ❖ The height of Shiva Lingam in this temple is 12 feet. Tamil language has 12 vowels. ❖ The height of Shiva Lingam's pedestal is 18 feet and the consonants of Tamil language are 18. ❖ The height of the tower is 216 feet and there are 216 vowels in Tamil. ❖ The Shilingam located in the sanctum sanctorum of this temple is the largest Shivalingam in the world. ❖ Rajarajan's construction of a 60 meter high stone temple with 15 storeys in the Kaveri plains where there are no stones is a testament to his artistry. ❖ The temple is proud to have been declared a World Heritage Site by UNESCO in 1987. ❖ Evidence of the wealth and art of the people during the Chola period can be traced through this temple. ❖ The temple stands as a testament to the unique Dravidian architecture, Chola rule, and civilization of the Tamil people. ❖ The architecture, sculpture, painting and bronze sculpture in this temple is a great testimony to the skill of the Cholas of that time. **Conclusion** ❖ Tanjore Periyakoil exhibits the splendor of Chola architecture. Also, this temple has been declared as a World Heritage Site by UNESCO. Hence, it is undeniable that this temple stands out as living history even today.
7	**Write about the sculptures and temples located in Mamallapuram with proper evidence.**
	Introduction Mamallapuram is a city known for its historical sculptures. Mamallapuram is the treasure trove of Pallavar period sculptures which was the turning point of sculpture as far as Tamilnadu is concerned. Sculpture includes buildings, their components, decorative forms, sculptures etc. Through this he can see the sculptures and temples of Mamallapura. **Sculptures and Temples** The historic Pallavar sculptures located at Mamallapuram,

	(a) Beach temple (b) Pancharats (c) Varaha Cave Temples (d) Archunan tapasu rock can be defined as **(a) Beach Temple** Beach temple It was built with granite stones in the 8th century B. It is the oldest temple in South India. It consists of one big temple and two smaller temples. It is said that a total of 7 temples were built here and they were destroyed over time due to floods and submersion in the sea. There is also a sculpture of a lion carved out of a single stone in the temple complex. It is designed as Goddess Parvati seated on a lion. **(b) Pancharats** Known as the Pancharats or Pandavar Rathas, these 7th century sculptural ensembles are examples of monolithic sculpture in India. There are five Panchapandas in Mahabharata in one stone. His wife Draupadi is also sculpted. These five temples are respectively called Draupadi Ratham, Archunan Ratham, VimanRatham, Dharmaraja Ratham, Nakula – Sahadeva Ratham **c) Waraga cave temples** Waraga Cave Temple is the famous umbrella temple of the Pallavas. AD Built in the 7th century AD, these caves exemplify the skill of the ancient Vishwakarmas people. The seemingly random sculptures in the cave are exquisitely carved. Especially the sculpture of Lord Varaga holding Goddess Bhumadevi on his horns is very special. **(d) Archunan tapasu rock** The Archunan Tapasu Rock is situated near the Pancharatha sculptures with a height of 43 feet. This Tapasu Rock, which is divided into two parts, has sculptures of legends in pictures. It is noteworthy that in one part of these rock formations, Arjuna prays to Paraman for penance and in another, King Bhagiratha prays to bring the holy river Ganga to earth. **Conclusion** The sculptures in Mamallapuram are so delicate and natural that they have been declared a World Heritage Site by UNESCO. Through this we can know what is the beauty of Mamallapura city.
8	**Write in detail about the Gopuram (monumental enterance tower) architecture of the Nayaks.**
	Introduction

Contribution of temple art to the history of art Tamil Nadu is known for its royal legacy like Pallavar, Chola, Pandyar and Visaya Nagara. The temple architecture of the Nayaks who later ruled Madurai, Thanjavur and Senchi, etc., has also been praised. So this article explains about the tower architecture of the Nayaks.

Kings

The Nayaka kings ruled with cities like Madurai, Thanjavur, Senchi, Kalahasti etc. as their capitals. Their mother tongue is Telugu. The Nayaka kings were engaged in repairing the temples that had been built earlier. They made certain changes in the temple towers. They also established mandapams with decorative work.

Temples built by Nayak

Madurai Meenakshi Amman Temple, Tiruvannamalai Annamalaiyar Temple, KalakastiTemple, Kanchi Ekambareeswarar Temple, Varadarajar Temple, Mylapore Kapaleeswarar Temple, Trichy Uchi Pillaiyar Temple, Tirupati Esumalayan Temple and many small and big temples located in Arkadu, Thanjavur, Kumbakonam etc. They have also renovated ancient temples and done a lot of charity for spirituality.

Gopuram (monumental enterance tower) architecture

Nayaka kings are involved in the arts. Tamil Nadu has got beautiful buildings, sculpturesand paintings from them. Huge temple halls and idols of Dwarapalagar were created by them.The main part of the tower is its entrance. They are located inside the tower gate. The entrance rises up to the first kapotha of the tower and it splits into two inside. Most of the towers have a two-hole entrance.

The upper floors of the Nayak period towers are built of brick, lime and mortar.

On the gopurams, paintings are drawn to decorate the gopurams in the form of legends,unique sculptures, sculptural lines.

Without innovation, Nayakars have introduced huge and exaggerated gopurams and multi-story sculptures on the walls of the gopurams.

The Nayaka kings built huge (150 and 200 feet high) multi-storied towers and foundations to support them in a very elegant manner. Especially the Madurai and Tanjore Nayaks have paid more attention to making the towers very high.

A similar arrangement of placing Ganapati and Muruga in small columns on either side of the tower can be seen in Chola towers. This tradition is found in Visayanagara art and Nayakart.

The interiors and canopies of the tower were beautifully painted. These paintings depict religious and social events. Thus, after the Pallavas, Pandyas and Cholas, a large number of temples, mandapas and gopurams were built during the Nayaka period.

Sculptures of Kuravan, Kurathi, Vedan etc. are placed in the temple pillars which can be respected by all. Through this, it can be seen that the equality of the Nayak period is manifestedin the art of sculpture and architecture.

Conclusion

	Although the Nayaka kings were mostly involved in the renovation of old temples, the Nayaks also followed the Palam tradition and established more than ten tiered temple towers, ornate mandapams etc. in Tamil Nadu from the above evidence.
9	**Explain and write about Tirumala Nayakkar Palace and its interior.**
	Introduction The palace known as Tirumala Nayakkar Palace or Tirumala Nayak Mahal was built in the 17th century by the ruler of Madurai, Tirumala Nayak. Two kilometers away from Madurai Meenakshi Amman Temple, it is designed in the Indo-Saracenic architectural style. This article aims to bring out the beauty of this temple. **Tirumala Nayak Mahal** Located in Madurai, this temple is considered one of the wonders of South India. Designed by an Italian architect, only a quarter of the building is believed to remain today. It was renovated in 1872 by Francis Napier, Governor of Chennai, British India. Tamil Nadu Government Archeology Department is maintaining it. **infrastructure** a) Ranga vilasam b) Heavenly vilasam e) oliyum (light), oliyum d) Pillars U) Limestone building The former are located in parts of the palace. **Building structure** Designed in the architectural style known as Indo Sarasnik, the palace is 58 feet tall. It is supported by 248 colossal pillars. On the ceiling are painted legends of Vishnu and Shiva. At that time the palace consisted of two main parts. One was called the heavenly address and the other the arena address. Sorkka Vilasam was the residence of the King and Aranga Vilasam was the residence of his younger brother Muthiyalu Nayak. And in this palace block, it is understood that this palace includes various areas such as music hall, theater hall, Ballaku road, armory, place of worship, residences of other royal family and snowmen, parks, lakes etc. Since 1981, considering the development of tourism, the sound and light show has been going well till date. Through this, the Tamil Nadu government is getting good income.

	National Monument After independence, Tirumala Nayakkar Palace has been declared as a National Monument. Presently it is under the protection of Tamil Nadu Archaeological Department. It isopen from 9 am to 5 pm for tourists to see. **Conclusion** From the above evidence it is obtained that the magnificence of the Madurai Tirumalai Nayak Palace and the best example of the architecture of the Madurai Nayaks is the Tirumalai Nayak Mahal.
10	**Which is Chettinad? Explain the layout and features of Chettinad houses.**
	❖ Chettinad is not a separate country. It is a famous country within Tamil Nadu. The urban area comprising 96 villages centered on Karaikudi in Sivagangai district is known as Chettinadu and Nathukottai. ❖ Chettinadu was called Chettinad because of the large population of Nathukottai Chettiars known as Dhanavanikars in this area. ❖ Structure of Chettinad houses ❖ The architecture of Chettinad houses is world famous. Architects, experts and researchers from different countries are studying this architecture. ❖ The smaller palace is 40 feet wide and 120 feet long and the largest palace is 60 feet wide and 200 feet long. ❖ Houses are painted with attractive colors such as green, yellow and red. ❖ Chettinad houses are also designed with decorative lighting, teak furniture, marble, mirrors, carpets and crystals. ❖ These houses have at least 30 rooms. Some houses, such as the Khanadu Khatan Palace, have more rooms than that. ❖ The wall is made with a mixture of lime, black pepper and mustard seeds ground into a check and mixed with egg white. **specialties** Teak doors, wooden desks, huge iron safes, chairs, swings and other woodwork items add beauty to the home. Another specialty of Chettinad houses is Athangudi tiles. Today the use of these tiles has increased not only in Chettinad houses but in all areas. Chettinad houses have a spacious courtyard on either side of the entrance door. It has wooden pillars with exquisite carvings. Scenes from the Ramayana and Mahabharata have been carved in lines at various places in the mansion. The Chettinad community has traditionally held their house parties at home. So their house looks like a big hall. It is worth noting that nowadays some houses have been slightly modified and used as star hotels.

	From the above evidence, we can know the layout and quality of Chettinad houses. Also the architecture of Chettinad houses are world famous. It is noteworthy that even today, architects, experts and researchers from various countries are studying this architectural art.

UNIT III PART-A	
1	**Define 'Kattumarangal'** The Kattumarangal(கட்டுமரங்கள்) were used for catching fish and playing Punal(புனல்) games. Theppam, Mithavai, Punai, Parisal etc. are the varieties of Kattumarangal mentioned in Tamil literature.
2	**What are the types of Marakkalangal made by Tamils?** Navai, Marakalam, Bengal, Madalai, Kapal, Ambi, Thimil etc. are the Marakkalangal made by ancient Tamil people.
3	Who is Kammiyer? Those who excelled in ship technology and sea voyages were known as Kammyers.
4	**Who is the author of the book 'Kadalodi'?** Narasaiya
5	**What were the occupations undertaken by Padavas?** Pearling, fishing, sangaruthal (சங்கறுத்தல்), salt production.
6	**Write about the ancient technique of protecting ships from lightning.** The two ends of a very long piece of wood which carries the sail as the central axis of the ship are covered with copper and joined together. This system is similar to Dipole Discharging used in modern electronics industry. The thunder arrester will drop it in the water of the sea. This process will prevent the ship from damage.
7	**What is the work of blacksmiths?** Blacksmiths are the one who smelt iron and turned it into steel and made various tools out of it.
8	**State how hardened steel (எஃகு- Ehku) is made.** Steel is an alloy metal. Carbon dioxide, and minerals like manganese, nickel, and vanadium are added to iron to form hardened steel.
9	**Who is the author of the book 'Kanakathikaram'?** Kaarinayanar
10	**Write about ancient coins of Tamil Nadu.** Coins are used to show the importance of maritime trade of the Palandamis. Coins were used as a kind of jewelry and it was considered as a customery by the people of that time. These coins were made of gold. These coins were small, spherical in shape and also shaped like neem fruit, gooseberry, etc.
PART-B	
1.	**How did the ancient Tamil people showcase their expertise in shipbuilding?**
	Introduction: Long ago, the clever Tamilians figured out a smart way to fish using logs. They called it "katumaram." Picture this: logs put together to make a boat that glided smoothly on the water – simple yet effective. But the Tamilians didn't stop there. They saw potential for improvement. Instead of just one log, they arranged three – one in the middle, flanked by two on the sides. This upgrade created a better boat, showing how good they were at adapting to make things work even smoother. Then, things got even cooler. They joined five trees together to build a super boat. This wasn't just about fishing; it was a masterpiece of craftsmanship. This story isn't just about boats; it's about how the Tamilians were smart in using what they had, making their lives on the water better and showing a deep connection to the sea. So, these early boats aren't just vessels; they're symbols of the Tamilians' cleverness and their special relationship with the sea. **Art of shipbuilding:** In the South Pacific Ocean, the largest cargo ship has been discovered in marine excavations off the coast of Australia. After examining the ship, they said that it is more than 2500 years old and that it

	belongs to Tamils. An Englishman called 'Lieutenant Walker' admired the Tamil ship in 1811 AD. He said that a ship built by the British should be maintained once in 12 years, while a ship built by the Tamils would not require repairs for up to 50 years. Thus, the Tamils have excelled in shipbuilding technology. There is much sculptural evidence of its use in shipbuilding. The Kanchi Stupa has numerous sculptural works in the postures visible in the four directions. In a horoscope story there is an allegory of merchants sailing on a ship. Similarly, a painting in Ajanta shows a shipwreck and sinking. Thus, ancient paintings and news about the shipping industry have been placed. **Restoration:** Nowadays many countries are reviving their traditional sail building technology and the way they are used. Today, science and technology have developed so much that we need to recover our forgotten ancient history. At a time when other countries and citizens used two types of wood, Tamils used 20 types of wood to build ships. Narasaiya has built the bottom of the ship in layers so that the bottom of the ship can be taken off like a DECKING SYSTEM so that the ship does not sink if the ship is wrecked during the sea voyage. From the statement of Narasayya, the author of Kadalodi, the Tamil's deep-seated involvement can be discerned. The history of the term catamaran is an example of Tamils being legendary pioneers in shipbuilding. It seems that CATAMARAN is a word widely used all over the world because the British took the word 'Katumaram' from the Tamils during their rule. **Conclusion:** Tamil Shipbuilding means ship building, maintenance, sailing etc. In this way, we can understand the ship technology and involvement of the ancient people.
2.	**Explain the use of iron among the metals used by primitive man.**
	Iron plays an important role in the development of human civilization from the Stone Age Civilization to the Iron Age Civilization. Iron metal discovered by early man was used as weapons and tools by the people of that time. Archeological studies at places like Kodumanal, Melsiruvalur, Kuttur, Adichanallur, Arikamedu confirm that iron may have been introduced in Tamil Nadu around 500 BC. Sangam literature and archaeological historical studies have recorded the flourishing of iron industry in Tamil Nadu and the export of iron and steel to countries like Rome and Egypt. Besides, ancient Roman documents record the export of steel from the Chera region of Tamil Nadu during the Sangam period. **Iron and Siddha Medicine** The Siddhas, who discovered Siddha medicine, referred to iron as Ayam and also in alchemy iron is classified as base metal. Bogar, one of the eighteen Siddhas, wrote a book called Bogar 7000, which he wrote separately about the six types of iron, Karaloka, Karanjaloka, Tarapatta Loka, Pasara Loka, Kala Loka and their properties. In Siddha medicine it is customary to prepare medicines like Senthuram and Baspam using iron rich herbs and iron world. Siddha doctors prescribed medicines like Senthuram and Baspam in the required doses after knowing the condition of the patient. The history of the use and origin of iron is said to cure diseases such as gallstones, jaundice, obesity, jaundice, stomach ache, menstrual cramps, hunger, constipation, etc. In Hindu medicine, they incorporate a variety of ingredients such as herbs, minerals, substances, powders, and many other components. They consider these elements as medicinal properties beneficial for health, and therefore, they utilize substances like iron or those mentioned in the principle to formulate remedies for various ailments. After identifying these components, they research the ways in which these substances can be transformed into effective remedies. These findings are then applied to create medicinal formulations, not only in food but also in various therapeutic practices, particularly in pediatrics.
3.	**Write about technological marvels in Iron and Steel Industry Unveiled in Sangam Literature**

	In a groundbreaking revelation, Sangam literature provides insights into the advanced technology of the iron and steel industry that flourished during ancient times. The literary works from the Sangam period shed light on the sophistication achieved in metallurgy, offering a glimpse into the remarkable craftsmanship of the people of that era. **Mastering the Art of Metallurgy:** Sangam literature showcases the ancient Tamil people's mastery in metallurgy, particularly in working with iron and steel. The texts describe intricate processes involved in extracting, refining, and shaping these metals for various applications. **Innovative Ironworking Techniques:** The literature unveils innovative ironworking techniques employed by ancient artisans. From the extraction of raw materials to the forging of intricate tools and weapons, the Sangam period witnessed a high level of technological advancement in the iron industry. **Versatile Applications:** The Sangam texts highlight the diverse applications of iron and steel during that period. Apart from weapon manufacturing, the people of Sangam era utilized these metals in crafting agricultural implements, showcasing their understanding of the pivotal role these materials played in societal development. **Technological Prowess in Steel Production:** Sangam literature not only emphasizes iron but also provides glimpses into early steel production methods. The advanced knowledge in manipulating carbon content for producing steel alloys is a testament to the technological prowess of the ancient Tamil metallurgists. **Economic Significance:** The technological advancements in the iron and steel industry had profound economic implications. The ability to produce high-quality tools and weapons contributed to the region's economic prosperity through trade and craftsmanship. **Cultural and Historical Context:** The portrayal of iron and steel in Sangam literature adds a cultural and historical dimension to our understanding of ancient Tamil society. The significance of these metals goes beyond utilitarian purposes, reflecting the societal values and the importance attached to technological achievements. In conclusion, the Sangam period stands as a testament to the remarkable technological achievements in the iron and steel industry. The revelations from the literature not only enrich our historical understanding but also underscore the ingenuity of ancient Tamil metallurgists who laid the foundation for advancements in metalworking technologies.
4.	**Explain the coins in use during the Sangakala Tamil Nadu.**
	Introduction The field of numismatics plays a crucial role in understanding the history of Tamil Nadu, contributing significantly to the establishment of the educational sector. Particularly, the discipline of economic science be hm,kil,.comes paramount. During the Sangam period, various currencies such as the coins of the Pandya kings, the Muthuraja kasu, the Peruvazhuthi coins, the Chera coins, and others were circulated, showcasing the richness of Tamil Nadu. Therefore, this essay aims to illuminate news and information about the currencies of the Sangam era in Tamil Nadu, offering insights into the economic excellence of the region during that historical period. The history and economy of Tamil Nadu can be known through the coins issued by Movendra, Kunnilam kings who ruled Palandamilagam, and the Indian economic disparity with the coins of other country kings found in Tamil Nadu. After the end of barter, the people of that time accepted coins as a proper substitute. Gold, silver, bronze and iron coins were introduced according to the economic condition of the ruler. Coins is a multi-purpose term. This word occurs many times in Sangha texts. People of that time

	pierced these coins and used them as a type of jewelry. Ancient literature records that the ancient Ikas were neem-like and gooseberry-like. These small and spherical gold coins were also used in trade in those days. Coins featured kings, deities, religious symbols etc. So these help to know the arts and religions of that time. The value of a coin is divided into intrinsic value, extrinsic value and antique value. Coins are a medium of conveying historical information about the civilization, economy, culture, etc. of the time it was issued. All the kings who ruled Tamil Nadu issued coins with animals, birds and religious motifs like tiger, fish, horse, bull, lion etc. to give importance to the mother tongue. Korkai Pandyar coins, Muthukumi Peruvaluthi coins, Makkotai, Kutuvan Gothai coins, Peruvaluthi coins etc. have been found in the excavation conducted by the archeology department. Coins of the era of Rajarajan are the most common ancient coins found in Tamil Nadu. Roman copper coins have been found extensively until the 1st century BC. Mughal emperor Akbar, Rama and Sita engraved coins and Hyder Ali Tipu Sultan's reign coins with Shiva and Parvati images have emerged. During the reign of the Nawab of Arcot, coins inscribed a large number of Saiva Vaishnava gods Shiva, Vishnu, Ganapati, Murugan and Hanuman. **Conclusion** By examining the coins that were in use in Tamil Nadu, it is possible to know about the trade, culture, balance, religious unity, and tolerance of the ancients. The shapes of the stones that are collected by the people of the Kurinji land as an occupation are recognized for their natural beauty.
5.	**Write in detail about the shapes of beads.**
	The shapes of the stones that are collected by the people of the Kurinji land as an occupation are recognized for their natural beauty. The mode of production of the Kurinji land is inherently nature-inspired. The ancient Tamils, who lived in the hills, used the tusks of elephants as tools to collect gold by sifting through sand. When they find gold, the Kurinji people pick up stones, recognizing the shapes of stones placed on gold. Many shapes of stones have been found in archaeological excavations conducted in Tamil Nadu, where various types of stones were used for different purposes, such as grinding, crushing, or making jewelry. Through such discoveries, the shapes of stones have been brought to light, revealing their use in various activities during the Sangam period. 1. Circle Shape (Vattavativam): This type of stones, with white-colored designs and patterns, is generally found in sizes of 8 cm in diameter for common stones, 5 cm for small stones, and 12 cm for larger stones. On stones with naturally occurring patterns, various shapes like circles, lines, dots, and sahasra vatam (a specific design) can be observed. 2. Teapot shape Teapot shape beads are seen without decorative lines. 3. Biconic shape The biconical beads have a decorative pattern of tiles painted with white lines. While some beads have transverse lines, more than 50 percent of beads have three undulating lines on the sides and in the

	middle. Some beads also have three identical lines. Only one bell has a wave line between the two lines. 4. Spherical form The fourth form of spherical beads has no white streaks. All the above patterns illustrate the patterns of waste that occurred when the ancient Tamils transformed raw materials into ornaments. Finally, in areas like Karur, Gangeyam, Kodumanal, Oonjalur etc., beads of various shapes are found. Karur Amaravati river basin is rich in carnelian in many forms. A carnelian stone bell recently found in the Amaravati river basin has a beautiful fish symbol, seal, crescent etc. beautifully arranged in the center.
6.	**Write about the Craftsmanship of Gemstones among the Tamil People.**
	Introduction: In the mountainous and forested regions inhabited by the Tamil people, a traditional practice of collecting gemstones has thrived for centuries. This unique trade involves meticulously extracting gemstones from their natural habitats and transforming them into small, intricately designed ornaments and beads. The process includes refining these gemstones into tiny nuggets and adorning them as small jewelry or embellishments on clothing. **Refining Gemstones into Artistic Adornments:** From the gems obtained in these regions, craftsmen fashion delicate and small-sized ornaments. These gems are carefully cleansed and transformed into small beads or intricate designs, adding a touch of elegance to the wearer's attire. The refined gemstones are often incorporated into necklaces, earrings, or other accessories, showcasing the exquisite craftsmanship of the Tamil people. **Utilizing Natural Resources:** The gemstone collection process involves transforming the smallest gemstones into beads or small embellishments. Some of these beads exhibit a natural crystalline structure, making them ideal for ornamental purposes. Hence, the extraction and refining of gemstones directly contribute to the creation of unique and aesthetically pleasing adornments. **Innovative Techniques in Gemstone Processing:** One of the unique methods employed in crafting gemstones involves placing them in a pan, tightly sealing the pan, and heating it to prevent the gems from escaping. The gems, when subjected to heat, undergo a transformation in color, attaining vibrant hues. This innovative technique, using a sealed pan and the application of heat, enhances the visual appeal of the gemstones. **Traditional Attire and Gemstone Adornments:** The refined gemstones are often integrated into traditional attire, enhancing the overall aesthetic of the clothing. Craftsmen use various sizes and shapes of gemstones, turning them into accessories that complement the wearer's outfit. This meticulous attention to detail reflects the rich cultural heritage of the Tamil people. **Diverse Gemstone Applications:**

	Apart from their use in jewelry, these gemstones also find applications in other aspects of daily life. The Tamil people have traditionally used them in religious ceremonies, cultural events, and even as a form of currency. This multi-faceted use of gemstones highlights their cultural, economic, and spiritual significance. **Conclusion:** The craftsmanship of gemstones among the Tamil people is a testament to their rich cultural heritage and artistic ingenuity. The process of collecting, refining, and transforming these gems into intricate ornaments reflects not only the aesthetic sensibilities of the Tamil people but also their deep connection with the natural resources of their mountainous and forested homelands.
7.	**Describe Komedhakakal and Manikkakal.**
	The types of gems found in ancient Tamil Nadu, such as Ilanjivapukal (sapphire), Neelakkal (blue stone), Komedhakkal (cat's eye), Pacchaimanikkal (emerald), Maanikkakal (ruby), Civappukkal (coral), and Pacchaikkal (green stone), are considered as beautiful treasures obtained locally by the people. **(a) Komeetakkal** During the Sangam period, in the town called "Punnaadu," cat's eye gems were found. Komeetakam refers to cat's eye gems with a bluish tint. These gems were observed in the Surangam (mines), and the foreign traveler Pliny mentioned them. In Tamil Nadu, high-quality gems such as Vaidooryam, Komeetakam, and Neelamani were found. Cat's eye gemstones are also found in Andhra and Kerala. In literature, cat's eye gems are referred to as Komeetakam. Many gemstones obtained in Tamil Nadu were transported to foreign countries through trade routes. Various types of gem-cutting industries flourished, exporting gemstones like pearls, diamonds, and emeralds through the sea route to foreign countries. The historical book "Periplus" mentions the export of pearls from the region around Koyambedu in the first century. **(b) Maanikkakal** Maanikkakal, also known as rubies or red corundum, is found in light red or deep red colors. It is one of the Navaratnas. Its red color is caused by chromium. These gems are found in Thailand, Cambodia, Afghanistan, and other countries. In Tamil Nadu, especially in the Surangam (mines) and mountainous regions, rubies are found abundantly. Even during the Sangam period, the greatness of rubies is highlighted in Tamil literature, as seen in the poem from Purananuru. Despite the difficulty in obtaining rubies in Tamil Nadu, Sangam-era people preferred them for their unique qualities. **(c) Other Gems** Apart from cat's eye gems and rubies, various gemstones were found in Tamil Nadu. Ilanjivapakal (sapphire) is mentioned in literature, and its beauty is emphasized. People in the Coimbatore and Salem regions specifically mention the presence of sapphires. In the Cholamandalam region, people appreciated the beauty of emeralds, comparing them to the eyes of deer, and considered them valuable. Even during the Sangam period, people adorned themselves with these gems, reflecting the rich cultural heritage of ancient Tamil Nadu.
8.	**Elaborate on the uses of the gems discovered in ancient Tamil Nadu.**
	"In ancient Tamil Nadu, the production and export of exquisite gemstones, especially pearls from the Neelagiri region, were prevalent. Gemstones obtained from this region included: 1. Green Stone (பச்சைக்கல்) - Found in the coastal region of Kangayam in present-day Tamil Nadu. - It was highly valued during the Sangam period and was extensively used by the people. - Kangayam coastal areas, such as Anaimalai, Kodumanal, Karur, Musiri, and Thondi, played a significant role in the extraction of green stones. 2. Gomedhaka Stone (கோமேதகக்கல்)

	- Gomedhaka stones were found in the town of Punnaadu during the Sangam period. - The stones, characterized by a deep red color, were sourced from regions like Andhra Pradesh and Tripura. 3. Red Stone (சிவப்புக்கல்) - Red stones, known for their high value, were obtained in abundance in the Kongu region. - Places like Tirukkambuliyoore, Alagarai, Karur, Urainoor, Alagankulam, Arikkamedu, and Kodumanal were known for the availability of these red stones. - These stones were also exported to foreign countries by traders. 4. Uthanira Stone (ஊதாநிறக்கல்) - Uthanira stones were widely available in coastal cities like Chennai and other seaports. - These stones were actively exported to foreign countries through seaports, contributing to trade and commerce. 5. Manikkam Stone (மாணிக்கக்கல்) - Manikkam, also known as ilangasivappu or adar sivappu, was a gemstone with a bright red or deep crimson color. - It was sourced from countries like Thailand, Cambodia, and Afghanistan. - People in Sri Lanka engaged in gemstone mining and extracted high-quality rubies. 6. Neelakam Stone (நீலக்கல்) - Neelakam stones were found in the Shevaroy and Western Ghats regions, particularly in the Kaveri basin in Tamil Nadu. - In the past, the extraction of blue sapphires from the Kangayam region contributed significantly to the gemstone trade. 7. Palinkukkal Stone (பளிங்குக்கல்) - Palinkukkal stones were mentioned in Sangam literature, particularly in songs praising the Kaveri River. - They were used as ornaments, and people in the Kaveri delta areas received them as gifts. 8. Padikakal Stone (படிகக்கல்) - Padikakal stones were found in abundance in the Kongu region, particularly in places like Kangayam, Karur, and Alagankulam. - These stones were associated with good luck, and people used them as currency. This information provides insights into the types and significance of gemstones found in ancient Tamil Nadu, highlighting their role in trade, commerce, and cultural practices."
9.	**Provide details about the advantages of subsoil drainage.**
	Introduction: Keeladi, situated approximately 20 km south of the Madurai city along the Vaigai River, has emerged as a significant archaeological site in Tamil Nadu, India. The excavation at Keeladi sheds light on the second urbanization phase of the Indus Valley Civilization, dating back around 2200 years. This essay explores the unique aspects of the Keeladi archaeological excavation, particularly its findings related to the lifestyle, culture, and knowledge of the ancient Tamil people. **Keeladi Archaeological Site:** Keeladi, located in the Sivagangai district of Tamil Nadu, stands out as one of the most extensive archaeological sites in the state. It surpasses many other contemporary excavations in Tamil Nadu in terms of the scale of findings related to ancient urban civilization. The site has yielded a rich array of artifacts, including exquisite beads, pottery, iron tools, and other items that provide insights into the daily lives and cultural practices of the people who lived during the Sangam period. **Seventh Phase Excavation:** In the seventh phase of excavation at Keeladi, 13 trenches were dug, revealing a wealth of artifacts. Notably, seven potteries found in one trench contained inscriptions in ancient Tamil script, contributing significantly to our understanding of the linguistic and literary heritage of the region. The findings include gold ornaments, musical instruments, stone tools, copper implements, and various items

	associated with daily life. **Features of the Excavation:** The excavation unearthed a unique red pottery basin in one trench, showcasing distinctive features. The basin, with a depth of 60 cm and dimensions of 34 cm (length), 30 cm (width), and 24 cm (height), contained a variety of artifacts. Additionally, five more basins were discovered in the same trench, displaying an array of items in reddish-brown color. **Cultural Artifacts:** Keeladi has provided a treasure trove of cultural artifacts dating back to over 2600 years. Among the findings are gemstones, pearls, women's jewelry, terracotta figurines, ivory combs, copper tools, iron weapons, and more than 5300 beads. Notable structures from the excavation include granaries, brick structures, and well-planned layouts, indicating a sophisticated urban settlement. **Conclusion:** The Keeladi archaeological excavation stands as a testament to the rich cultural, educational, and economic heritage of ancient Tamil Nadu. The artifacts and structures discovered offer valuable insights into the lives of the people during the Sangam period. Keeladi's significance in Tamil history and its contributions to our understanding of ancient civilizations make it a pivotal site in the world of archaeology.
10.	**Establish 'Kodumanal' as a center for civic awareness in Sangam literature.**
	Introduction: Kodumanal is a town situated to the north of Chennimalai in the Erode district of the ancient Kongu Nadu. It lies on the northern bank of the Kaveri River, connecting Karur, the capital of the Sangam era, with the western coast. Therefore, Kodumanal holds historical significance in the ancient trade routes. This essay aims to establish the historical importance of Kodumanal. **Kodumanal:** In Sangam literature, it received the name 'Kodumanam,' signifying the brilliance of ironwork. Skilled craftsmen in ironworks, known for creating intricate designs on sturdy iron artifacts, were present in this region. Kodumanal has been recognized for its significant contributions to industrial and technological advancements in the fields of engineering and metallurgy. **Industrial Hub:** Kodumanal has evolved into the industrial hub of Tamil Nadu. The town is renowned for its robust iron industries, producing various tools and ornaments through forging and casting processes. Notable products include thousands of varieties of ornamental and utilitarian items, such as statues, weapons, and agricultural tools. The town has been a major exporter of these products to foreign countries, including Egypt and Rome. **Commercial Relations with Foreign Countries:** Kodumanal has been involved in extensive trade, exporting goods like iron and various commodities to civilizations like Greece, Rome, and Egypt. The town has gained prominence as an international trade center, fostering economic and cultural exchange with foreign nations. **Artifacts from Excavations:** Archaeological excavations in Kodumanal have unearthed artifacts such as golden and silver coins from the Roman Empire, as well as statues and iron tools. Notably, a well-preserved lion sculpture and an iron pillar have been discovered, dating back to the Chola period, showcasing the town's rich history. **Kodumanal:** In conclusion, the above-mentioned historical records reveal the uniqueness and individuality of Kodumanal. The town has played a pivotal role in the cultural, economic, and technological progress of the region. Additionally, Kodumanal has attracted merchants, scholars, and artisans from various foreign lands, contributing to its status as a prominent historical and industrial center.

	UNIT-V	
	PART-A	
1	**Who will support the development of Tamil Science?**	
	Science study magazines in Tamil are being released to promote awareness of science among students. Science year ceremonies, science forums, and events like "The Sound, The Light, The Plays" are organized to propagate science and its impact on development through subsidiary initiatives in Tamil.	
2	**What are the magazines that publish related news in science?**	
	Magazines such as Health Sprout, Science, Ray of Light, Cattle Ray, Your Body Good, Science Wing, and Agriculture publish science-related news.	
3	**What is the purpose of a website as a medium?**	
	A website serves the purpose of immediately presenting and disseminating one's opinions and information. Reviews and feedback can also be obtained through the website itself..	
4	**What are some reading tools for e-books?**	
	E-book reading tools include Amazon Dot Com (Kindle), Barnes & Noble's Nook, SonyReader by Sony, Apple's iPad, and similar devices.	
5	**Name the locations for software development in Tamil.**	
	Software development locations in Tamil include I.I.D. Chennai, Elder Brother University Adyar, Buy It Engineering College Thiruperundurai, V.I.D. Vellore, I.I.D. Kanpur, and Kharagpur.	
6	**What is the purpose of the Tamil Internet Institute of Education?**	
	The Tamil Internet Institute of Education, initiated by the Tamil Nadu government in the year 2000, aims to provide high-quality education in Tamil via the internet in fields like Tamil proofing, language, literature, art, and more to enthusiasts.	
7	**What educational programs are offered by the Institute of Internet Education?**	
	The Institute of Internet Education offers programs ranging from kindergarten, certificate education, charter courses, and even an undergraduate degree in Tamil	
8	**Write the Tamil equivalent of the English word Hard Disk, Element.**	
	Hard Disk –□□□□□□□□□□ Element –□□□□□□..	
9	**Note the Tamil Wiktionary**	

		The name of the dictionary for Tamil within Wikipedia is Tamil Wiktionary. It serves as a platform for numerous creative endeavors in Tamil. It's an encyclopedia of messages compiled in various languages, averaging 267 languages worldwide in Wikipedia.
	10	**What is an e-dictionary that aids Tamil learners?**
		Google Tamil English–E Dictionary is an e-dictionary designed to assist Tamil learners.
	11	**State two uses of a dictionary.**
		A dictionary serves as the sole place for literal explanations in various languages. It enables global communication for university students and enhances language learning and interest.
	12	**What is the primary objective of the 'Sorkuvait' scheme?**
		The 'Sorkuvait' scheme aims to safeguard and preserve the Tamil language, prevent its dilution through influence from other languages, and amplify its usage.
		PART-B
	1	**Write in detail about today's scientific advancements for the development of the Tamil language.**
		Introduction Science belongs to the individual or the nation. It is common to the whole world. The benefits of science are shared by all, educated and uneducated alike. Scientific development slowly took root and expanded at the end of the twentieth century. Science has no language restrictions. Language has functioned only as a tool rather than a hindrance to its infinite achievements. It is essential for everyone, especially students, to know the innovations and other scientific and non-scientific facts being discovered in a corner of the world that has been shrunk by various communication tools. In this revolution of knowledge, the language also gets involved and enriched and gets the ability to compete with other countries. **Mother tongue education** Mother tongue education will be of great benefit to us who have to live with the world. Philosophers note that when learning a foreign language, the concepts of that language are transformed into their own language cues. Historical facts show that the thoughts that result from learning in the mother tongue are the best. Evidence for this is abundant in both the major fields of biology and science.

Even illiterate people easily understood other hints given in Tattam language. Therefore, it is obvious that learning and teaching in the mother tongue combined with life can produce excellent results. If we take the developed countries of the world as evidence, we can see that all the subjects are being taught through the mother tongue in all those countries.

English's dominance has spread to many countries around the world, making it the most widely spoken and connecting language. All the information of World Innovations is readily available in English. Research papers published in other countries are translated into their language in China and information is exchanged instantly. Thus language acts as a medium of communication as far as science is concerned. Learning and teaching becomes easier if the medium of communication is mother tongue.

A strong foundation and clear thinking are needed to make new discoveries through one's own efforts with basic scientific concepts. Without clarity in thinking, new ideas cannot be created and implemented.

A 10-minute tutorial can introduce the message you need to know by reading a ten-page lesson. It is to deeply impress the messages in the mind by providing face-to-face practical training and to try other trainings based on that training. In this case, the ability of students to understand can be increased by teaching textual education and formal education through our mother tongue Tamil.

It has been many years since Tamil was introduced as a medium of instruction. Life and science subjects are taught in Tamil from primary to high school. Tamil medium education is also provided in government colleges. However, while the number of students studying mother tongue education is in majority up to secondary school level, it is less in higher educational institutions like colleges and universities.

It doesn't matter whether students pursuing an English Language of Instruction degree are proficient in English or any other subject. As a foot in the river is a foot in the mud, half there and half here. It is a stagnation in knowledge caused by networking without clearly understanding elements and concepts. This does not lead to clarity of thought. This can only be done if the facts of the particular subject are learned by mistake. Tamil, which is naturally the home language and the language of life, helps a lot in quick understanding and thinking. And what one gets in college has little to do with the job one gets hired for. After graduating in science subjects, they work as clerks, typists and managers in banks,

		other government and private institutions. Thus, the training and education he received in science subjects, the money he personally spent to get his degree, and the money the government spent on him are wasted. **Conclusion** From the above evidence, it can be seen that we have to do our duty for the development of today's knowledge and that proper arrangements should be made for students to learn science subjects in Tamil.
	2	**What responsibilities do we have for the advancement of Tamil?**
		Publication of scientific research journals, publication of entertainment science picture books to create scientific awareness among students, conducting science annual festival, establishing science forums, spreading scientific ideas through sound and light dramas are very essential for the development of science Tamil. The number of periodicals published in the sciences is very small compared with the weekly periodicals published in other arts. Certain journals like Health Thulur, Vijnanachudar, Kalaikadir, Vetikadir, Sama Sanathan, Vishna Wing, Budding Agriculture are continuously engaged in the effort of science dissemination. Readership of these magazines is very less. Universities should come forward to publish other scientific journals like these as a service. In Bharathidasan University, abstracts of research papers in specific scientific fields are being translated and published in Tamil. Similarly, it is essential to establish a separate system to keep the students informed of the news happening in all the scientific fields and to preserve the news. In many developed countries, including Japan, all research papers published in English are translated into the native language and presented to researchers. This eliminates the possibility of study stagnation. This can also be done in Tamil. Difficulties may arise in the translation of terminology in the beginning. A separate committee should be appointed for each branch of science to examine the terms in use and newly coined terms, accept the appropriate ones and prescribe them for use by all. A few bumps in the beginning will get smoother over time. The government, one way, the people say that way. The government should document the

		implementation of Tamil as the language of instruction and training in all scientific disciplines including medicine and engineering. Our answer to those who ask if this is easily possible is 'yes it is'. A great reformation can easily be effected by a small order. When science is taught in colleges and universities through Tamil, the students studying in it will not be able to go to other places in search of employment. Some argue that their intellectual development will suffer if they are not immediately available. There does not seem to be any truth in this claim. Because we do not prohibit learning English or other languages 'as a language'. But one can learn well only by studying it; We deny that it can be investigated. If there is truth in the above statement, will the number of educated people in our country be unrelated to the study of Indian science and economic knowledge? In our country, which produces a large number of graduates every year, there should be a large number of studies to compete with. But here the situation is different. We are only teaching graduates ie non-work related education. Therefore, education and employment should be properly linked. Today, there is no sector where computers have not entered. In the near future, it may even become impossible for any department to function without computers. Proper training courses should be instituted to inculcate the interest of the students in computer-based Tamil medium education especially in science and vocational subjects. Clear vision, strong basic education and proper technical training are essential for human resource development and national progress. In this day when nursery schools and matriculation schools are increasing, there is a need to raise the slogan of everything including science in Tamil.
	3	**Write an article on the development of computers in Tamil, accompanied by a corresponding illustration."**
		Introduction Human society has been constantly trying to develop language ability, a special ability of the human brain. One of its uses is the taxonomy for natural languages. The written form of language was the first language technology developed by man. Written language is the technology developed by human society to preserve its ideas across time and space. Man began to embody his ideas in various media: pots, rocks, stones, footprints.

Its present day development is typesetting, print and computer fonts.

Computer Tamil

About 30 years ago, there was no facility to input Tamil into the computer. Tamil fonts, keyboards are not created. Only if facilities are created for Tamil input first then other applications can be considered. Later, a facility was developed to input Tamil text in Roman characters and convert it into Tamil fonts. Software like Adami was developed. Created fonts for Tamil characters.

As a further development, Tamil keyboards were developed. As a result, there was a facility to input Tamil directly into the computer. The opportunity to use Tamil in software such as Word, WordPerfect, Word Star, PageMaker, Ventura has grown.

However, several problems persisted in encoding Tamil fonts into the computer. There was no standardization in coding for Tamil fonts. A situation persisted where a Tamil document typed with a particular Tamil software could not be read or edited by another Tamil software. The ASCII (ASCII) coding system was a hindrance to this. Tamil keyboards are also not standardized.

The next stage of development

The Tamil language technology that we have seen so far in inscriptions, printing, typing, printing and computers is the technology used to embed or imprint Tamil text or text on them. It is the language technology used to preserve Tamil practices over time and space. They cannot understand the Tamil work or text written on them or written on them by calligraphy, print, print or computer. Entries can only be stored securely.

This type of language technique can be called passive / passive language technique. This technique is similar to carving an image into a statue. An immovable statue on which an image is engraved does not understand itself. Even understanding what we say does not work.

If the computer can understand and act on the Tamil text written on it as we understand it, then it is an autonomous or active language technology. It is like a mechanical man. Isn't the machine human in some way understanding and acting on what we say, so this is language technology that understands and acts on what we say. This type of language

technology has also been developed for continental languages such as English and German.

Machine translation

When you type English text with English dictation software like MS Word, spelling and grammar errors are detected immediately and displayed with a red line. The software also helps us by providing correct words so that we can correct them immediately. That is, these softwares work like a language teacher. This can be done because these softwares also have the language knowledge that the teacher has. It includes automatic spelling and grammar checkers.

Some software like Dragon, we just need to speak English in front of the computer and they will type on the computer. This is called speech to text converter. As such, there are software programs that read the computer to us as it is. These are called text to speech converters. Beyond this, there are softwares that can understand the content of some pages and tell us what they mean when we input them into the computer. This is known as functional abstract conceptualization. Efforts are currently being made to develop software that can translate text or content in one language into another.

How has all this been possible for Western languages? Vocabulary knowledge and grammar knowledge of these languages are programmed into the computer. So, just as our brain understands and acts on language, so does the computer. It is because our brain has knowledge of our language that the brain understands what we speak and write; We can also express our thoughts in language. This knowledge must be fed into the computer as programs. Only then will the above language technology develop.

Can it be in Tamil?

All the above linguistic techniques should be applied to Tamil language as well. Only then will the range of use of Tamil expand. This work can only be successful if Tamil language knowledge is presented in a mathematical manner in a computer understandable manner. A field called Computational Linguistics and Language Technology is growing today as a field for that. Only if the study of Tamil language is done based on the knowledge of that department, electronic Tamil and Computer Tamil will develop.

Grammar texts and today's linguistic studies were created for the human brain. If you give

		them to a computer as it is, the computer cannot understand it. They must be converted into computer programs that can be understood by the electronic chips located in the computer. All Tamil dictionaries should be converted into computer-readable ones. The capacity of the human brain is different. The capacity of the computer is different. With background knowledge, our brain can understand a concept even if it is abstracted or implied. But a computer cannot do that. So Tamil grammar and dictionary should be given in a format suitable for computer comprehension. **Conclusion** Today, efforts to include Tamil in the development of Tamil have been largely successful. Many problems have been solved in the creation of Tamil fonts, keyboards. In turn, Tamil Wikipedia, blogs and websites are proliferating. All these are welcome Tamil works. But all these are just the first stage of computerization development. We have now passed this first stage. From now on, our work should be directed towards the next stage of development: self-directed active language technology.
	4	**B.D. F. Explain the use of the system.**
		PDF format • PDF is a portable document format(PDF) is a file format developed by Adobe Systems in 1993 for document exchange. PDF is a software used to represent two-dimensional documents in a way that is independent of application software, hardware and operating system. Each PDF file contains a complete description of the standard-layout 2D document, including the text, fonts, images, and 2D vector graphics that make up the document. Recently, 3D graphics can be embedded in PDF documents with Acrobat 3D using U3D or PRC and various other data formats. **Use of PDF format** • We store many PDF files in our computer but if we mark some important lines in that file we can easily and immediately see it next time. Sometimes the description of the important images can be written in the PDF file. What is surprising is that we can convert PDF files online without any software support.

		• The PDF format is to store a document in electronic form instead of printing it on a printer. There is no change in the format of the text except the change in the medium. • Cover, table of contents, page numbers, feedback, etc. are all embedded in the PDF document as they are in the print version. • Instead of turning pages printed on paper with a finger, we turn pages on a screen with a mouse. • The page displayed in the PDF reader can be viewed larger or smaller. But the layout of the page can make the letters bigger or smaller. Images and page size will be resized accordingly. But the appearance of the page will not change. • If a page has 10 lines and two images, no matter how much you change, only the same number of lines and images will appear on that page. The lines on the next page will not appear on this page. Likewise the lines on this page do not carry over to the next page. • Creating eBooks in PDF format is very easy. You can save PDF e-books from the same process as formatting a document for printing. Applications such as Microsoft Word, Adobe In-Design etc. are suitable. Saving files as PDF requires a program called PDF Writer. These are available for free. • Best to avoid Page Maker app. In this old app it is not possible to set pages with unicode tamil fonts. So many problems may arise in Tamil e-books created in Page Maker in future. • Only a few features can be added to the stored e-book in this system. You can use programs like Adobe Acrobat to link the headings on the content page to the pages in the thread. Apart from these minor improvements, no other innovations can be made in PDF e-books.
	5	**Write about the design and benefits of a website.**
		Foreword In today's world of information technology, the 'Internet' is doing great help to the people of the world irrespective of language, race, etc. It contributes greatly to the development of

literature without being restricted to a few specific areas such as science, mathematics, and science. The ancient Tamil language is also gaining a place for itself on the Internet. A new genre of literature called 'web flowers' has emerged and is making a great contribution to the Tamil language which is growing with innumerable genres of literature on the internet.

Website

A society must do today's work with today's tools. A race that does today's work with yesterday's tools will suffer tomorrow's life. It is inevitable" according to Dr. V. S. Kulandhasami, we have to do today's work with today's tools. It is on that basis that we have started using the internet. A separate literary category called blogs has emerged from it. A website is a service through the Internet that enables an individual to communicate with others in the world through the Internet, including letters, sound, optical files, drawings, and images used to communicate from one person to another.
A blog is called a blog in English. By this means weblog (Webblog). On 17-12-1997 John Barger created and used the name Webblog in English. After this, the name Blog, which is an abbreviation, was used by Peter Merholz from April 1999. According to his website, the first blog in Tamil was created by a blogger named Navan on January 26, 2003. But on 1st January 2003, Karthik Ramas created the first website, as pointed out in the web magazine Chinta Nadi. Nine of these two blogs are bloggers. com and Karthik Ramas blog Blackdrive.

Professor M. Ilangovan mentioned in the 8th Tamil Internet Conference Malar that the blogger Karthikeyan Ramasamy (Karthik Ramas) made the first blog in Tamil. Tamil Wikipedia also mentions Karthikeyan Ramasamy's website as the first Tamil website. After the publication of an article on the creation and uses of Tamil web pages in the web magazine Vekhtigar, many people started to know about Tamil web pages. In the early days of Tamil blogs, there were problems with the Tamil font, so the development was a bit slow. From 2003 to 2005, about 1000 blogs appeared. Subsequently, in the period from 2005 to 2007, this number increased to 4000, Professor K. Duraiarasan has mentioned in the book "Internet and Iniya Tamilum"..

Conclusion

In the history of literature, we call Sangam period, Sangam Maruviya period, Bhakti literature period, Kappiya period, Cilitakya period, European period, the present period can be called "Computer era" or "Tamil internet age". contains iThus a variety of Tamil

		literature is quickly carried to the outside world. Thus, the contribution of blogs to the development of the Tamil language can be seen to be making a great contribution.
	6	**Writ an in-depth explanation of the Tamil Wiktionary, specifically focusing on its function as a Tamil dictionary.**
		TamilWiktionary • Tamil Wiktionary is a collaborative effort to create a free multilingual alphabet, including meaning for words, phonetics, example sentences, sequences, etc. • Not only Tamil – Tamil, English – Tamil, Tamil – English but also French, Sinhala, Malay language etc. can be interpreted in it. This project was launched on July 24, 2004 as one of the Tamil projects of Wikimedia Corporation. **Uses of Tamil Wiktionary** • Tamil Wiktionary is the name of Tamil Wikipedia's dictionary that does many creative things for Tamil. Wikipedia is a global information platform. • 2001 - Created in English language. The Wikipedia encyclopedia compiles news in about 267 languages worldwide. Wiktionaries are part of this. It supports Wiktionaries for 172 languages. Alphabetical dictionaries contain glossaries. • Launched in 2004 as an attempt to give meaning to Tamil words, today it ranks 10th in the World Internet Dictionary with 1,918,257 words. • Tamil words are placed in the order of Tamil – Tamil – English and in the order of English – Tamil. There are other language equivalents of Tamil (eg English, French, German, Hindi, Malayalam, Kannada, Sinhala). There is also a facility to hide English words. • In the section about father, or Tamil words, the news is given in two major categories, etymology and nouns for the word father. There is also a title to describe the etymology. • Under the heading of Vocabulary words are divided into two categories namely Tamil – English and English – Tamil. This section contains a dictionary of words found in Palandamili literature under the category Tamil Dictionary. **Tamil Dictionary** • Immin's dictionary in English-Tamil-Cherman language is special. If you enter English words, the corresponding Tamil word and meaning will appear. They also give German language material immediately. Also pure Tamil words are featured

		in the e-dictionary. It has various search facilities. • English – Tamil, Tamil – English, English – German, German – Tamil are available so we can get the alternative language and its terms and benefit from this dictionary.
	7	**What does 'e-book' mean? Explain its benefits.**
		• Electronic books or e-books are very popular in today's technological world. Many printed books are being republished as e-books. And some newly published books are only published as e-books. • E-publishing of books enables high quality books to be published internationally at low cost and in short time. Along with text and images, print books are available. But technology is giving an opportunity to the extent that e-books can also contain multimedia such as animation, sound etc. • Such facilities add to the attractiveness of the e-book and thus increase the engagement of the students with the book. He looks at the various formats of e-books and their appearance on mobile devices. **Electronic systems** • An e-book is an electronic or digital version of a book. E-books are generally developed by publishers to distribute their books through electronic, digital media. These can be plain text or contain special information about the text. E-books are published in various formats. Let us see some of the important ones. • PDF format. • (HTML) format for publishing on the Internet. • The new international standard e-Pub (ePub) system. • All three systems are systems that can be run on all three platforms – computer, web and mobile devices. To read an e-book in PDF format, you need a PDF reader. A browser is enough to read an e-book on the web. An e-pub reader is required to read an e-pub format e-book. • Although all three systems are considered e-books, there are many differences between them. The way the text is designed, the tool used for reading, the experience of reading - these are the main differences.
	8	**Are creative messages highlighting the creation of Tamil software welcomed?**
		• A Tamil Software Incubation Center has been started at the Tamil Institute of Internet Education.

- This center will have work station, computers with internet connection, software and other tools.
- The center will help those who have creative ideas and the passion and energy to develop software in Tamil to carry out the research, testing, development and presentation of those ideas to the world.
- For creative minds, Tech.Parks and Product/Process Incubation Centers have come to support them. These are generally operating in institutes like IITs and major universities around the world.
- The technicians from the factories would come and stay here and try to carry out new ideas and research projects by using the laboratories, library and other facilities there in coordination with the professors in these institutes.
- As a result of the development of information technology, there is a great need to develop new software, so separate software development centers have been established in educational institutions. The Central Government is also developing and implementing a Software Technology Park of India (STPI) at Tharamani, Chennai.
- Such centers have been established in Tamil Nadu at the following locations.

IIT, Chennai

2. Department of Biotechnology, Anna University, Chennai

3. Kongu College of Engineering, Thiruperundurai

4. VIT Vellore

At the Indian level, these centers are also functioning at IIT, Kanpur, Kharagpur etc. Such centers are used by companies, teachers, students etc. to implement any idea.

- Today there is a need to develop software in Tamil as well. Some have ventured into this industry and have tended to develop Tamil software. And many people are interested in developing Tamil software. But they neither have the facilities nor the capital to build the facilities. So to help them, if we set up software development

centers with all the necessary facilities, their ideas will take shape; Many software will evolve; Its usage and demand for new software will increase. So mathematics will grow.

- Therefore, for the specific purpose of developing software in Tamil, a project was proposed to the Government of Tamil Nadu to establish a Tamil Software Development Center at the Tamil Internet Education Institute. The Government of Tamil Nadu has also accepted it and allocated Rs.45.00 lakhs under the Part-2 project.

- To implement this scheme, an expert committee has been set up in T.E.C. The committee met and defined the computer and construction facilities to be in place at the centre. Accordingly, on the ground floor of the TEC, private rooms of approximately 64 square feet, a discussion hall, a library and a reception hall will be established.

- The center will have computers, software, other tools and services for Tamil software development. The Center will help those with creative ideas carry out the research, testing, development and refinement necessary to bring those ideas to life..

1. Users:

1. Students/Faculty2. Creative minded individuals3. Small and micro enterprises

2.Method of selection of users:

- First they have to apply with their proposed project concept and explain it to the TEC expert panel.
- A panel of experts will select them based on the nature of the project and the need.
- Selected software developers will each be provided with a 64-square-foot workspace, a computer, and the necessary software.
- They can avail the TEC library and professional help in TEC.
- T.E.K. A conference hall at Will can also be availed.

3. Period :

The expert panel will decide how much time will be required for the project. This usually lasts from six months to a year.

4. Financial Requirement:

The TEC Expert Committee decided that the following fees could be charged as appropriate to recover the funds required to run the center on a non-profit basis. .

Fee Details:

V. No	Users	One month service fee
1.	For a student	Rs.1,000/=
2.	For an individual	Rs.4,000/=
3.	For micro, small entrepreneurs and companies	Rs.10,000/=

Also, if the software developed is very useful, there is a scheme to give a reasonable discount on the fee paid by the developer.

9 **Explain the concept of a project and elaborate on its intended purpose?**

Introduction

Words are the basis of language. Language can be preserved and improved only by preserving words. As the words multiply, the language grows and grows. From time to time some words in the language change their meaning; Some words are obsolete; Some words are newly formed. Compiling all these and publishing them in alphabetic form will be a creative task for language development.

In that way, the Government of Tamil Nadu wanted to compile and publish Etymological Alphabets in Tamil for the benefit of scholars, public, researchers and students.

Thinking that the work would be better only if there was a separate directorate to implement this, the Tamil Nadu government created the Department Head Office, Senthamilh Etymology Akaramudi Project Directorate.

Tamil language, which is the oldest language in the world, has a rich grammar, rich in literature in various fields, and has the power to create terms for all scientific fields from its vocabulary, which is developing very quickly, requires proper guidance to understand the meaning of the word clearly.

If creators and educators want to have the ability to know and express each

		vocabulary of Tamil language well, then an etymological dictionary that reveals the roots of Tamil is very essential for them. Only a language capable of creating terminology will survive in today's rapidly growing science; Will grow. Thus the Akaramudi Directorate is carrying out the primary task of supporting the life and development of a language. Collected all the words of Tamil language, gave the meaning of those words in English and Tamil, gave the explanation of the root word from which those words appeared, created and published in the form of books of Senthamilch etymology with illustrations of rare words; Also uploaded on the internet. What makes Tamil language proud is its vocabulary. Gathering all the terms in more than 600 fields in today's education field and designing Tamil terms equivalent to them and publishing them in the public space of the website and gathering all the words that have been published in Tamil dictionaries so far; Among them, the primary objective of the 'Sorkuvait' project is to make Tamil vocabulary known to the world by deduplication. Through the website Sorkuvai.com launched under this scheme, a way has been made to resolve doubts related to Tamil vocabulary. Doubts related to Tamil vocabulary can also be resolved through a toll-free phone line which will be launched soon. It is thought that by using this vocabulary scheme by scholars and linguists all over the world, Tamil will move from 14th place to 10th place in the list of languages published by the United Nations Organization (UNESCO). A separate website has been created for the 'Sorkuvait' project. Tamil scholars, Tamil enthusiasts, students, public etc. create new Tamil terms related to various fields can be uploaded on this website. The words will be uploaded and made available for use in the public space after being analyzed and approved by the expert panel of 'Chorkuvai'. Primary Objectives of Narrative To preserve the vocabulary of Tamil language, to increase the vocabulary of Tamil language, to help avoid mixing of other languages in Tamil language.
	10	Write about the E- dictionaries applications and marked messages arrangement.

Use of electronic dictionaries

Researchers, linguists and linguists are greatly benefited by the availability of e-dictionaries on the Internet.

1. Look for and buy printed dictionaries. If you get it, you have it. Today, online e-dictionaries break it down and make it easy for us to look it up. 2. Time is saved. No time wastage.3. No need to look up the subject with a dictionary. In the e-dictionary you can find and understand multilingual dictionaries in Tamil and other languages. 4. Tamil E-Dictionary is widely used by Tamilians around the world. 5. The words have been compiled and published department wise in the e-dictionary. It is easy for word searchers. 6. It has found a good reception for Tamil language in the world e-dictionary. 7. Multiple language definitions for a term are available at one place. 8. All of us can upload the case word, vernacular we know to the e-dictionary in the internet specific e-dictionary (Tamil Wiktionary) and make it useful for the language and others. 9. E-dictionary increases global university connectivity and interest in learning a foreign language. 10. Many new e dictionaries should be created by the Tamil Nadu government or by us to add new words. Only then will the superiority of Tamil be known to the world. 11. It is enough for the universities and colleges to compile the words in their area and post them on their institutional websites along with the meaning description. It will be a good journey for the development of e-dictionary. It will also be a relief for Tamil.

12. Tamil e-dictionaries should be created on the Internet to provide definitions of words i more than ten foreign languages simultaneously.

UNIT-IV	
PART-A	
1	Write a short note on Karikalan.
	Karikalan's pen name is Tirumavalavan. He built the bridge over the Cauvery river. He established tree planting, pond cutting, hospitals etc. in his country. The glorious Vangarika who speaks in praise of Pattinapalai and Purananootrupadal is great.
2	Explain river canal and lake canal.
	In agriculture, canal construction method is known as river canal. A river canal is a channel that brings water directly from the river to the field. A canal used to bring water to the lake is called a lake canal.
3	What were the Agricultural Technology Boards set up by the Pallava kings?
	Plantation, Lake management, Kalanivariam, Panchavariam, Accountancy, Tadiwayvariam etc. are agricultural technology boards established by the Pallava kings.
4	What is the profession of Aqueducts?
	Those who knew the strategy of how to distribute the river water to other water bodies near them without blocking the river water completely and filling only the lake were called Aqueducts.
5	What does matpan mean?
	A matpan is a pot made of copper. This meter is used to calculate the amount of water flowing per acre of land. That means there is a small hole at the bottom of the device. He fills the pot with water. It will be placed on the stone. If all the water comes out through the hole, it is considered that one acre of land has been flooded. This is known as the matpan system.
6	What are the main factors involved in lake formation?
	Digging of ponds, laying of culverts, irrigation canals, culverts, public wells etc.
7	What are the Elements of pond?
	The elements of the pond are the embankment, the water outlet, the mound which is used to drain the excess water.
8	What are 'wave rocks'?
	Due to continuous wave action of stagnant water in the pond, the shore in the pond is receding. To prevent this, stones are placed in this area. These rocks act as breakwaters and protect the shore from water erosion. Hence these are called wave rocks.
9	Write a short note on Dam.
	The system used to release water from a reservoir is called a dam. It is in a door like arrangement. This can increase or decrease the amount of water coming out.
10	What is Kalingu?
	'Kalingu' means the protective bulwark of the pond. A culvert is used to discharge the water

	that fills the pool above a certain level.
11	What is barter System?
	Barter System is the act of giving one thing and getting another thing in return. This is evidenced by the fact that Umans give salt and receive rice.
12	Are there ancient texts on aeronautical technology? Purananuru, Silapathikaram, Sivakacintamani, Perunthogai.

PART-B

1	Write in detail about the features of Kallanai Dam.
	Introduction Kallanai is the oldest dam in India. This dam is near Trichy district in Tamil Nadu. It is hailed by many as Akanta Kaveri. It was built during the British rule. Kolli and Thiruvaranga river island are nearby. From here Kaveri river reaches East Kallanai. This kallanai is built to prevent floods and to use the water to increase the irrigated area. This dam is almost more than 2000 years old. The biggest surprise is that this dam is still holding back the flood today. Explorers and many more in tourism are amazed to hear that all this is more than 2000 years old. History of the Tomb This stone was built in the 1st century AD by the Chola king called Karikalan. Kallanai is the oldest of the existing dams and is still in use today. It is said to be the oldest irrigation scheme in the world. As the foundation of the dam is built on sand, the technology of Palandamizhar who built this stone is a source of pride till today. The length of the tomb is 1080 feet and width is 66 feet and height is 18 feet. It is seen with a wavy texture. The dam is built with only stone and clay. For more than 1900 years Cauvery has been holding back the flood. A bridge was built over the dam in 1839. It has also become a tourist spot as a large number of people come from many places to see it every day. Stone built technology Centuries ago, the ruler of Tamil 'Karikala Cholan' saw the frequent floods in the Cauvery and the suffering of the people. The Tamils also found a way to build a dam over the Cauvery water, which flows two hundred thousand cubic feet per second. They brought big rocks over the river Cauvery. Those rocks also got buried in the soil little by little because of the water. Another rock was placed on top of it and a kind of sticky clay was coated on the new rock so that it did not dissolve in water and they made it stick to both rocks. This is the technology used to build this dam. Syrups of stone An English explorer named Sir Arthur Corton, who is said to be the father of India's irrigation,

	spent many years exploring this stone and brought to the world the knowledge of dam construction and irrigation management. He also named the stone as 'Grand Amgat'. Kallanai was built with only stone and clay. It took more than 30 years to complete it.The dam was built by hammering rocks together at a depth of 12 feet. The rock was mixed with clay. In the year 1839, a bridge was built over the Kallanai. If we stand on the bridge, we can see the wonder of the whole dam and natural flowers. Every day a large number of people from many countries and towns come to see this stone with amazement and surprise. During the British rule in the 19th century AD, Captain Major 'Jim Sir Arthur Corton', an expert, renovated the stone built by Karikalan without demolishing it. Mani Mandapam of Karikala Chola This oldest stone has a stone that stands firm after passing many centuries and is proud of the construction skills of the Tamils. A Mani Mandapam has been erected on the left bank of the Cauvery River on the road from Thirukkattupalli to Karikala Chola who built it. In this hall, there is a bronze statue of Karikala Chola sitting on an elephant. Conclusion The Kaveri river dam is a testimony that Tamils are proud of. All these three exist without love for each other. We have learned in every primary school lesson that Karikalan built this dam. Wherever the Kaveri river flows, there is the name Karikalan. That is why the Cholas called Kaveri the Karikala Chola Empire.
2	Describe Pallavar Irrigation Structures and Boards.
	Introduction The successors of the Sanga period were the Kalapras. The news about them is not so much presented by researchers. There were many who came to the throne after them. But there was a great king in Kanchi before these people. A man named Srivishnu suddenly overthrew the Pallava Empire in AD. This illustrious king existed before the establishment of the sixth century. He has been sung by Kadiyalur Uruthirang Kannanar, the poet who sang Thirumavalavan, also known as Ivan Karikal Peruvalathan. His name is Ilandraiyan. His pride can be seen from this. There is also news that Ilathraiyan is the grandson of Karikalan. He did irrigation works very well. The lake built by him is called Thirayan Lake called Thenneri. This can be traced back to the irrigation works of the Pallavas. Irrigation works Various types of irrigation constructions were expanded during the Pallava period. They have formed many boards. Although the information about them is less in the literature, there are information about them in the tombstones and inscriptions. Although they were non-Tamils, they later mixed with Tamils. They have cut down many forests and converted them into fields. Due to the irrigation works done by them in the northern part of Tamil Nadu, agriculture is still going well there. Nattukaal, Aatrukaal Kooram Seppedu means 'Vidya Vineetha Pallava Paramechura took the hand and dug the lake'. The Mahendravatik inscription tells about a pond called Mahendra Theertha. The Uttara Merur Inscription tells about the creation of a pond called Vairamekad Thakam. Apart from this, there are references to the construction of two canals namely country canal

	and river canal. It seems to be systems that can bring water directly from the river to the field and systems that bring water to the lake. Apart from this, the fountain drains are said to be springs. Auvaiyar mentions this in the series 'Ootkalalal Ulakudum'. Water from the dam has been diverted to many lakes. Apart from these, the irrigation structures named Koortan Vai, Vaitalai, Thalaivai and Mugavai are used to carry water from the river to the field. Pettavaitali near Trichy is a good proof of this. Land grants were given to maintain these. Administrative system The civic system was well established in small towns. Proper elections have been held. There was an autonomous administrative system. There were many small committees under this Chiturakshi. These are called Boards. It can be seen that the Pallava people of those days were the pioneers of the boards set up by the present government. They are • Samvatsara Board- General Board • Horticulture Board – deals with horticulture crops • Lake Board – Concerns about maintenance of lakes, irrigation of lakes • Kalani Board – Regarding Maruta land fields • Pancha Board – deals with tax collection • Board of Accounts – Management of Lake, Dam, Dam, Kalingu etc • Roads Board – deals with roads leading to fields, beds The creation of management system in such a sophisticated scientific manner is still surprising today. These boards have been functioning under the control of the Gram Sabha. There was an officer named Velinayam to look after the fences of the Kodikal plantations. Inscriptions record reports that the lakes were immediately paved over when they broke through. The Somangalak inscription states that 'Somangalamana Panchanadi Vanach Chaturvedi Mangalattu lake this day fell on the twelfth year of Mangalatu and it broke in seven places in one day. Conclusion From the above evidence, we can know the irrigation construction, irrigation systems and agricultural specialty of the Pallavas.
3	Establish how the 'lake' was used in agriculture by the Tamils.
	Introduction Agriculture was the primary part of Tamil life. It was considered essential to life. Due to this the farmers were elevated in social status. And being a producer of food grains, they lived with self-respect. Agriculture has been practiced since the beginning of the Sangam period. But they are also efficient in irrigation, ploughing, fertilization, storage and distribution. Through this, he can see how the irrigation of lake water has been useful for the agriculture sector. Water Management (Lake) Water management of Palandamizhars...! There was a very large aquatic community that was intertwined in Tamil life. These are the people who managed the water management. Their job is to bring the water flowing in the river to the lakes, store it and bring it to the farmlands. It is not uncommon for overflowing river water to be channelled into lakes. It requires a lot of technology. It fell on their knees. Even when the water in the river is low, how to bring that water to the lake? They did not know that!. How should the river water be distributed to the adjacent water bodies without blocking the river water completely and filling only the lake? These are the people who had known for so long. The name of that section of this aquatic

community is 'niranikars'. They are responsible for bringing the river water to the water bodies.

Lake Keepers

Is it possible to bring water? Shouldn't that water be tied up and protected? They are the ones who are fully responsible for that lake. The waterman must allow any activity in the lake like fishing in the lake and farming in the lake during periods of low water!

Lake Guards

A lake's life is on its shores. If that shore is breached, it will destroy itself and destroy those who rely on it. That is why the banks of the lake are considered very important and such banks should always be kept strong. Those who watch the work are called 'Karaiyar'. They are responsible for the lake! No matter how fortified the shores were, the lakes were always threatened by enemies. Damping a lake can easily derail a country's economy.

Lake cleaners

Although sangha hymns say that breaking lakes is a great sin, there have always been one or two kings who did not respect this. There are also enemies who cannot be defeated in an honest way and destroy such water bodies. The people assigned to protect the lake are the cleaners or pond keepers. They also chased away trespassers into the lake. A lake spread over hundreds of acres. In this, goats and cows fall down and die, and sometimes people die. The cleaners are the ones responsible for the cleanliness of the lake, who are responsible for the cleanliness of the lake by destroying the plants and algae that grow unnecessarily in the lake to dispose of such things.

Mothers

The responsibility of bringing the water released from the lake to the gates of the fields through canals was entrusted to 'Neer Vettiyar' and 'Neer Bachiyar'. They are the ones who monitor the water for the fields. There were structures like Matagu, Madai, Kumizhi, Dhoombu on the banks of the lake for irrigation and to release the water during floods. There was a division to open and close these gates.

They are known as 'Maudars'. A lake's shore is the lifeblood of a lake. It was the Tamils who were most concerned about making the banks strong. Tamils also excelled in setting up akkarais.

Lake shore formation pattern

All over the world, when creating lakes, they first create an inner wall made of clay. This prevents the lake water from leaking. After erecting this wall, other soil will be added to it on both sides to further strengthen the embankment. It is the prediction of the westerners that without a clay wall, burn banks cannot be built. However, clay was not used in many of the lake banks designed by the Tamils. They have made the lake bank using the soil available nearby. These walls are made by using something like a glue that binds the soil with the soil. It is noteworthy that not even a drop of water leaks out of it.

Conclusion

Through the above evidence, we can know the agricultural technology that came from Tamil Nadu and how the lake was used for irrigation.

4	Write in detail about animal motifs in Sangha literature.

• There is much historical evidence that the knowledge of fauna has prevailed in the countries of the world since ancient times. Many scientific facts have been established that man was born from ape.
• The Greek word 'zoology' has become a common term for zoology in all European countries.
• Animal motifs and seals are found in Indus Valley finds. Archaeology provides evidence that knowledge of animals was very clear among the Palantamils.
• The ancient genealogies (Ch. 2 to 26) mention fifteen types of male animals and thirteen types of female animals and their juvenile names.

• Monthly inclusion of animals as the theme of subject areas reinforces knowledge about animals.

Form of Sangha Literary Animal

• Many of the Sangha hymns depict animal motifs found in Sangha literature. However, only a few examples will be mentioned here.

• Sangha literature mentions three types of deer namely Irali, Navvi and Mariayan. Among these deer, Iralai deer is said to be the most beautiful, black in color, with a dark neck and white base of the neck. Zoologists say that this black-and-white pattern is present only in males and not in females.

• After drinking the rain water of Karkalat, the male of Irali rests fearlessly with his partner in the shade of the pitava tree and sways like a swaying cow.
• According to this song, the belly of the male Iralaiman was white at that time, which is similar to the zoologists' statement that the belly of the Iralaiman is white and the back is black.
Watching the above mentioned news emphasizes the idea that not only the tiger kills the elephant but also the elephant kills the tiger.
• Many sangha songs deal with the invasion of crops near forests and the destruction of crops, the grazing of elephants at night in the paddy fields, and the elephants' preference for bamboo and bamboo shoots in the forests.
• A tiger does not eat grass even if it is hungry. An elephant does not eat meat even if it is hungry. The tiger usually kills and eats deer and pigs as its prey. The tiger eats the animals it has killed by dragging them long distances or grabbing them and storing them. Tigers have the habit of not eating at the place of killing but sneaking and eating.
• A tiger has a tendency to eat the same food again and again, even if it smells bad and hides the leftover food in its den or den. These qualities of the tiger are explained in the Agana Hundred Hymn (chap. 72).

Monkey and snake

• A person born from a monkey is called a man. The relationship between monkey and snake is different. Zoologists say that monkeys get very scared when they see a snake. Pythons are said to hang on trees like tentacles and catch and kill and eat monkeys. Because of this, monkeys feel fear and trembling when they see a snake.

• It is said that the monkey is afraid of the snake and holds on to the snake for fear that it will bite if it is released. A sculpture containing this message can still be found at Ambi, the ruined capital of the Vijayanagar kings.

	• In this way, if we find the different qualities, morphological structures and customs of animals found in the Sangha literature and compare them with the cultural elements of the Tamil people, we can see that the animal elements are fragrant with the human mind.
5	Write how 'ponds' were used for ancient agriculture.
	• Agriculture plays an important role in human social development. Early agriculture depended on the rains. If there is no rain in the proper season, agriculture cannot take place. Thus, the idea of saving rain water during the rainy season was born. Ponds came into existence through this thought. • Bank, Madai, Damaku, Kumizhi, Kalingu etc. are the main elements of the pond. • In earlier times our ancestors made ponds to prevent water from springs from wasting away. The water from it was used for drinking and agriculture. Eventually the puddle widened and turned into a pond. • A pond is a small, still, land-based body of water formed naturally or artificially by pooling within a depression. • The kings who ruled Tamilnadu built many ponds. The ponds built in this way are known by the names of those kings. • In the pre-mechanized era, the occupation of the majority of people was agriculture. People's residences were built around the ponds that were built. • They were constructed to facilitate agriculture through the drainage of pond water. Therefore, many agricultural villages were formed around the lake and the name of the town belonging to the lake was kept as the name of the lake. • Normally pond is irrigated in three ways. They are rain water, river water, and spring water. • Ponds were originally used for drinking water and agriculture. But now pond water is not used as drinking water. It is used less for agriculture and more for bathing and other needs. • There are people involved in the fishing industry in the pond. The fish caught in this pond are called fresh water fish. They do not absorb salt like marine fishes. • Many ecosystems are linked by water, and ponds have been found to contain more biodiversity than large freshwater lakes or river systems. • Therefore, ponds are habitats for many types of organisms including plants, amphibians, fish, reptiles, waterfowl, insects and some mammals. Ponds are used as breeding grounds for these species. • A cross dam is probably only on one side to retain the rainwater flowing towards the ditch. It is called Kulakattu. Pool bars are usually straight. Some pools are exceptionally curved. There are also two dammed ponds. • Another channel with sluices is also provided to drain the water from the pond in case of increased rainfall during the monsoon season. If the dam overflows with rain water or the dam breaks, the hatches of the dam will be opened. • Theppakulams are ponds built for the needs of temples. They cannot be used for other applications. • Ponds are generally shallow bodies of water that are also a source of abundant aquatic plants and other aquatic life. . • Many ecosystems are connected by water, and ponds have been found to have more biodiversity than large freshwater lakes or river systems. • Therefore, ponds are habitats for many types of organisms including plants, amphibians, fish, reptiles, waterfowl, insects and some mammals. Ponds are used as breeding grounds for these

	species.
6	Establish how the highlanders took up pastoralism.
	• Sangha literature includes octuplets and tenfolds. It is divided into internal and external. Industry is the basis for raising the standard of living of the people. People set up businesses based on the land they lived on. • Hilly land is also called Kurinji. Forested land is called Mullai. Field and field land is called Marutham. Weaving of sea and sea land is called Neythal. • Mullai is one of the five types of land tenure known to the ancient Tamils. Forest and forested areas are mullai land. Mullai land is also known as Sembulam. Tolkappiyar says that Ayar and Vedtuvar are the names of men in Mullai land. • Shepherding of goats and cows is the main occupation of the Mullai landowners. Mulla's land god is called Tirumal. The herdsmen grazed goats and cows and derived their income from the produce. • A son born in a shopkeeper who owns goats as his wealth, in the evening lays down on a palm frond that he carries in his hand. He wakes up in the morning and collects milk and delivers it to the houses in the village. Then he brings home the food they give him, says a hymn. • In the evenings the young ones who walk slowly are tied with ropes. The calves will raise their voices as if they want the milk udders to contract. On seeing it, cowherds with necks with jingling bells would go towards the houses to untie the calves. Akananoor (54: 9-11) mentions that Kovalar would walk behind with a stick in his hand. • The bishops who shepherded the flocks knew nothing but shepherding. They herded the sheep while playing the flute. Narita (364: 9-10) exemplifies that a herd of beaded goats with grassy hair stops grazing and joins the fold when evening comes. • Midian stands alone in the middle of the night with a pot and a copper-wired pot with Colin at his feet. A sheep stands guard over a goat. He makes a fire with a matchstick and folds his mouth to make a gurgling sound. Agananoor (274:7-8) reveals that the jackal who came to catch the lamb fled because of that sound. • It is narrated that the shepherd of the sheep plucks the thorn flower and makes a wreath (266:1-3), and makes a 'veela' sound with his tongue folded so that the goats gather together and do not stray. At night he sleeps on a cot next to a sheep, covering his bed with palm leaves. Another legend (142: 4) also relates the news that Idyan would fetch milk and sell it to the townspeople at a high price. • Pastoral women are the ones who rise before the dawn of the morning. She can sell buttermilk in the nearby town. She will get food equivalent to that. Kurundogai (210:2-3) says that the women of the pastoral clan buy and rear cows in return for the money they receive. • Also in the land of Mullai the birds and animals gather together and roam happily, and the branches and vines are full of various kinds of fruits, and the richness of the

	forest can be seen from the Five Hundred (414) saying that it is a fertile and fragrant forest. • It is unlikely that sheep herding was the only occupation of shepherds in Mullai land in Sangha literature. They may have first grown in the wild to produce plant food for the goats and cattle. Then he must have seen crops grown in the neighboring land. Therefore, it can be seen from this that the people cultivated the forest and plowed it, sowed crops and lived with what came from it as food.
7	Bring out the features of barter system in Sangam trade.
	Barter Barter means exchanging one thing for another. It is an ancient currency. Commodity exchange is in circulation all over the world. For example, you can get a bunch of lentils for a bunch of rice. This was the method followed in the early days. It has many definitions. Barter in Tamil Nadu Tamils who lived in ancient times used to barter their daily necessities like rice, dal, salt, milk, curd, fish, meat etc. without paying money. They paid for only the most expensive items. In spite of the bartering system in the big cities and towns, in towns and villages barter generally prevailed. In the villages of Madurai district barter system is still going on. In the literature it is said that Idayan gave milk in exchange for grain. Salt in barter Sangam Tamils knew the use of salt. They have made beds on the weaving land and grown salt. The place where salt is produced is marked as 'Uppuvilai Kalani' (Kurundogai 269:6). for food; Salt is called 'Uppamudu' based on its taste. In the beginning, the salt produced by them was carried in bullock carts and sold in the hinterland. Since they are referred to as Umansathu, it can be said that they are operating as a business group. There was also sale of salt by individuals. It is evident that rice and salt were barter goods of equal value because one of the brides said, 'Can you buy bronze salt right next to rice' (Akananur 140:7). The same message is introduced by another Akananuttu (390: 8-9) in which a woman who gnaws from village to village as 'Rice and salt are nere, urir, koliro'. This shows that salt has received the same value as rice. The Narita (183:1-2) mentions that 'He gave his country's grown margarine and extracted foreign salt'. Akananooru (60:4) introduces the cooking of white rice with salted rice, which refers to a mother who goes to the salt pan to buy salted rice (269:5-6). The hunters who live in the forest by hunting have got rice instead of venison, and the women of the Ayar clan who grow anir have got rice instead of curd (Pura 33:1-6). They have received paddy in barter (Num. 61:10). Fish in barter It can be seen from the five-hundredth verse (49:2) that 'a few fish scrape and get a lot of rice' in bartering, which is a food product, but not having the same value as rice. Five Hundred and Five Hundred Verses (7:1-2) mentions that the box-sized crab was a popular

	substitute for fish. Akananuuthu Cheyul (126:11-12) introduces the woman who buys pearls and jewelry instead of swordfish caught in the Cauvery river basin, saying, 'She will wear the face of old rice, and the kiss of the betel nut will give her good fortune' (126:11-12). The plate brought by the fish is filled with butter instead (Five hundred 48:2-3). Here, fish and rice are of equal value. In barter system Alcohol has been the best consumer product of the Sangam Tamils. Liquor called s is obtained from coconut and palm trees and is also made at home. They are called 'Illads' based on the fact that they are made in the house. Rice is used as the raw material for this. Apart from s, liquors called Theral and Naravu are also in use. Barter also involved alcohol. They bought elephants' horns by giving them (Akananur 245:10-12). They bought the pearls they got while catching fish (Akananuru 296:8-9). Other objects Kurundogai (221:3-4) mentions that a shepherd shepherd came from a pasture on the outskirts of the town with milk and returned with milk. This can be taken as bringing the milk and giving it at home and returning to the factory with pulp from there. Guj means food grain, and it is said that 'he sold milk and got food grain as a price' in the short version (2009:413) of U.Vesa. has written Based on his text it can also be said that milk and food grains were bartered. Porunaratupapa (214-217) mentions the barter between the hunters who live in search of food, the weaving land people who live by fishing, and those who cultivate well with the help of water. Honey and ghee are added to yams Refuse fish ghee The theme is black and white Refuse alcohol with deer. The Kurinji land hunters gave the people of Neythal land honey and yam as two precious commodities and got fish and dal in return. It is noteworthy that the Nansei cultivators gave up sweet sugarcane and avala made from paddy and received venison and wine in exchange.
8	Write about the fishing industry as featured in Sangam literature.
	Introduction Tamils have been fishing in the sea for a long time. References to the fishing industry are widespread in the Sangam literature. Today we call those who go to sea and do fishing as fishermen. They were referred to as 'Valaignar' during the Sangha period. 'Valayanjar' is a causal noun meaning one who fishes with a net. Fishermen References to fish species are abundant in the Sangam literature. Sangam literature also contains references to catching fish from water bodies like Madu, Kulam, Kalani. But the word 'fisherman' is nowhere to be found. An Akananooru song goes into the sea and calls the fishermen 'Thimilon'. Tamil means 'fishing boat' (Tamil Lexicon, p.1880). There is also a Puranunooru hymn that sings 'Vanparadavar in Dindim' (Pur. 24). Another hymn (Agham. 60: 1 - 7) mentions going into the sea in Thimil (also meaning in Thimil - wood) and catching fish. Women selling fish Beautiful Bharatava women dressed in turbans sell the fish they have caught in the 'Thimilon', a fishing boat that goes out into the sea of rising waves and sells them on the streets where the

	festivals take place. Such a well-to-do village is the head of the village', which mentions fishing by boat and selling fish on the street (Agam. 320: 1-5) Akanahunuthu song. It is the charitable land of the wealthy Porayan that the father, whose business is to catch red shrimps in the vast ocean, and who goes fishing in a big boat with a net in his hand, is the daughter who gives ayilai fish broth made from salt and rice made from rice bought with salt and added a delicious sour cream to the oil fish broth and kolam fish karuvatta (Agam. 60). : 1 - 7) exemplifies this. Fish farming There is also a reference to Perumpanathur Sada within Patuppat that the fish catchers in the pond are shot as netters. Once upon a time in Muthuven, during the day, a poor man wandered around in search of material to get rid of his poverty. A Panan who is returning from Thondaiman Ilandrayan comes across on the way. Convincing the poor Panan to go to the youth to get rid of his poverty, the Panan explains in great detail the way he should go. On the way Panan points out, the weaving land reference and the fisherman's residence are shot at one place. This can be found in the hymn (Purum. 270-274). Fisherman's residence If you stay in the nether's residence, you can have a good feast if you stay in the house of the nether who is fishing with her daughter in the big black pond where the black catfish and shrimps are multiplying and the mother is keeping the pond with perennial water during the long summer' (U.Vesa p. 236, 237). It can be known through classical music. In Maduraikanji (Madhu. 254-256) there is a reference to a netter who catches and sells fish in the pond. In the pond 'Kambutkozhi fishes with a net of deadly knots which he sold at a high price by pushing the vines to disturb the good sleep of Kambudkozhi' (U.V.S. p. 365).) is called Nachinarkiniyar. Weber means 'web fisher'. In Pattinapalai, there is a reference to Meen Prasalam (Pt. 197 - 198) in front of the website where Kaviripumpattinam is described. It means 'Fish leaped fearlessly in front of farmer's houses' Conclusion References to the maritime industry of the ancient Tamils are widely found in Sangha literature. They used logs and boats to go into the sea and live by catching and selling fish. They catch and sell fish from lakes, ponds and rivers in the land where they live.
9	Explain and write the agricultural techniques discovered by the ancients.
	Introduction According to the conditions of the four lands, the people of the Sangam period did their occupations. The land structure and their living environment have been the basis for this. The Sangha literary index songs reveal about agriculture industry, weaving industry, iron industry, jewelery industry, painting industry, musical instrument making etc. Among these, references to agricultural technology have been recorded in various forms. Among them, records on crop protection methods have received much attention. So this article explains the agricultural technologies of Palanthamijar. Agriculture industry It seems that agriculture also appeared when man appeared. Realizing the necessity of food, people took up agriculture. Hence agriculture was hailed as the leading industry and life industry. The word 'agriculture' means 'gift', 'upakaram', 'cultivation' and 'satiam' in Tamil. Food is the basis of human life. Ancient people lived on forest fruits and pulses. As the population grew, so did the demand for food. They have used the land for food.

Creation of arable land

Land and water are essential for agriculture. The people of Kurinji land who lived in the hilly area have cut and cultivated the land to suit the agricultural industry. They have also destroyed the forests in the hilly areas and created agricultural lands by cutting down trees. Punam reformed by cutting and burning the trees was called 'Sudupunam'. Burning the trees helps the soil to be well-baked and the crops to grow well. The ash obtained by burning the trees has also been used as fertilizer. The forge where the forest was cleared by fire was called 'Erithin Kollai'. There are reports that Kuravas created arable land by cutting down trees like Akhil and Sandalwood in the forests.

Water sources

Kapilar mentions that the world does not exist without water. People have known since ancient times that agriculture requires water resources. It was considered the king's duty to build water bodies.

The people of the Sangam period who lived on a tribal basis, used their respective land and natural water bodies as well as artificial water bodies for daily life and agriculture.

Waterfalls and springs are naturally occurring bodies of water in Kurinji land. The water of the waterfall and the spring water were used for agriculture.

Plow and live

As the saying goes, 'A wide plow is better than a deep one'. The story of plowing the land with oxen by several airs is found in the Kurinchithina hymns. They have sown pulses on the plowed land. Not only oxen but also buffaloes were used for plowing the land during the Sangam period. To get rid of weeds, to retain moisture, to allow crops to take root and spread, deep plowing is still practiced by the farmers even today. Tillage, fertilization, weeding, irrigation and crop protection are essential in agriculture.

Cultivation

The people of Kurinji cultivated five crops like paddy, millet, cotton, hemp and tillage. Ivana rice is a rice grown in hilly areas. It is also served as 'Malainel'. Ivana paddy has been sown in the lands cleared by setting fire to the forests in the hills with water from the waterfall.

People who practiced agriculture knew what seasons and what plants would bear fruit. Crops are planted according to the season. There are messages like plowing and bearing fruit in winter season and blooming in winter season in a short song.

Intercropping method

It is reported that the people of Kurinji had intercropped millet and cotton between them. Spread it on millet paper and dry it. From this it can be seen that the Tamils knew the 'intercropping' method of planting one crop in between another crop even during the Sangam period. Pinnathur A. Narayanasamy Iyer, the first editor of Narita, the Kuravas who lived in the hilly areas, cultivated eighteen types of crops namely paddy, grass, varaku, samai, millet, ekaru, thorai, iragi, sesame, dal, lentil, plough, bhanu, duvara, custard apple, sorghum, corn and rye. It is worth noting that the text is written as resulting.

	Fertilization During the Sangam period, cattle dung and leaves were used as manure. Manuring is essential for soil fertility and crop growth. Manuring and mulching are still practiced today. Crop protection Protecting the crops grown in hilly areas from birds and animals has been a big task. The Kurinji Kurans used to drive away animals like elephants and pigs and guard the crops. Kurinji Nilak Kodichiyar played musical instruments and chased away the parrots. Weeding There is a message of pulling the weeds grown in the Nansei fields by hand and cutting the weeds grown in the Bunsei land with a 'tular' (weeder or weeder). The following verses mention that the mountain jasmine and maral that have grown as weeds between the Nansei crop rice and the weeds that have grown in the Bunsei field have been cut with a pruner. It can be seen in the songs of Kunchinchithana that the animals were chased away by beating the thong drums so that the animals did not approach during the night harvest. Grain protection Harvested by elephants or oxen, the diggers dried the grain well on top of the rocks. By drying in this way, the moisture in the grains dries up and helps to preserve them for a long time. It can be known through the Sangha literature that Nansey crops like paddy were stored in 'Koodu' and 'Nedunguttilittum', Bunsey crops such as millet and varaku were stored in 'Kudir'. Conclusion Kurinji land people have cleared the forests, burned the trees and cultivated the land. He and cotton were intercropped between the millet crops. It is known from Sangam literature that intercropping system flourished among ancient Tamils. The time when the vangai flowers bloomed was considered the harvest season. The people of the Sangam period used cold, flat, thal, kavan etc. as crop protection tools.
10	Describe and write the features of 'Korkai' port.
	Introduction In ancient Tamil Nadu, trade was carried out by sea in ships. Sea trade was more prevalent than land trade. Sea trade was cheaper and faster than land trade, so shipping was better. Maritime trade required ships, and shipbuilding industries took place in every country. Ports were needed in the respective countries to move ships across the seas to import and export goods, so port famines were established in each country. port Most of the harbors were at bays where rivers joined the sea. There were also few harbors without estuaries. Lighthouses were erected at every major port. Customs duty is charged on imports and exports at ports. That toll belongs to the kings of their respective countries.

Port of Korkai

To the south of the Marungurb Pattinam was the Korkai Gudak Sea and on its western shore the Korkai Pattinam. Killing is called Periplus and the Greek text Kolkis (Kolklus). Ptolemy also says this.

At that time the Korakka Gudak Sea penetrated five miles inland. Pearl oysters and conch shells were produced here. Korkai Muthu is world famous. At that time there was this very famous Korkai Pannam on the banks of river Tamiraparani.

There was a Pandya prince here. AD After the 10th century, the sea mud of Korkai Gudak disappeared and has now become land. The Tamiraparani River is the reason why Korakka Gudak became a sea land.

Pearl and Sang

The site of Korkai Pattinam is now called Maramangalam, three miles west of the coast. AD The Pandya prince Vetrivetchezhiyan ruled Korkai in the late second century. Not only was the Korkai Pattinam a port famine, but pearls and conch shells were sold there.

Korkai was the seat and capital of the Pandya kings. Also the pearl city of the Pandyas was a commercial port of the Pandyas and a naval base of the Pandyas.

The pearl found in the port of Korkai was considered to be the best pearl at that time. Korkai was under the rule of Pandya kings like Viraporb Pandyan, Maraborb Pandyan, Vetrivel Chehyan etc.

Even though Nedunjezhiyan ruled from Madurai, he fulfilled all the expectations of the people of Korkai.

The pearls that accumulate in the sea get stuck in the hooves of Selvar's climbing horses and fall so much that they become a hindrance to them.

Those who go fishing in the sea give pearls as a price for the catch they eat. The men there dive into the sea not only to offer pearls but also to take Valampuri conch.

There, Umatyar, who belongs to a salt-producing family, puts pearls in a kilukulupai and plays with it to his children.

A lover praises that his lover's eye was like a weaver flower that blossoms in the morning in this field of killing. During the festival, they dress in green clothes and wear pearls and clinches as garlands.

Elephants brought from Venkatamalai region were used to protect the pearls found in Marabor Pandyar killing.

In the area of Korkai, there were people called Bharatavar. The women of that village worshiped the pearl-making industry, and enjoyed themselves by performing Kotti and Padayal.

Conclusion

From the above evidence we can know what is the speciality of Korkai port. It is also

	significant that Periplus, a Greek sailor who came to India in the first century, mentioned Kolki as Kolki and wrote that it was under Pandyan rule.