SUMMARY

The Harappan civilization is known as the earliest civilization of south-Asia subcontinent. It flourished during third second millennium B.C. It covers an appreciably larger area than the early dynastic Egypt or Sumer. Like other civilization Harappan civilization seems to have grown out of the skillful exploitation of the rivers valley resources in the north-western region of the Indo-Pakistan subcontinent. The Harappan sites provided evidences of systemic town planning, fortifications, elaborate drainage system, granaries etc. which throw light on the surplus economy, standardization of brick size, weight and measures, geometric instruments, linear scales and plumb-bobs. The Harappans were the first who gave the idea of the welfare of workers for the first time by establishing separate workers. Which now has become a necessity in welfare state. A unique type of hydraulic architecture is another legacy of the Harappan civilization. The Harappan people constructed their houses on immense platforms of mud or mud bricks. The Harappan cities were equipped with numerous wells, bathrooms and an intricate system of drains. The elites who lived in different parts of the cities did not constructed elaborate centralized places or temples as was common in Mesopotamia and Egypt, but they maintained well planned cities with massive walls and gateways to protect the citizens and to control trade. The evidence found during excavations revealed that the Harappan civilization evolved from
local culture that had its roots, extending back thousands of years to the earliest farming and pastoral communities.

Harappan civilization was spread over vast area. Its settlement runs broadly from Sutkagendor in Makran (Pakistan) in the west to Hulas in District Saharanpur U.P. (India) and Rehman Dheri (North Pakistan) in the north, Diamabad in Maharashtra (India) in the south and covers about 2,17,557 sq. km. Kenoyer estimated it about 6,80,000 sq. km. The earliest civilization of south-Asia is known as Indus Valley Civilization because a large number of sites were discovered in the Indus valley. The term Indus civilization was given by Sir John Marshall in 1926. The south Asian archaeologist S.P. Gupta called it Indus Saraswati or Saraswati (Hakra) civilization. He discovered a large number of Harappan sites in the Saraswati (Hakra) and its tributaries region.

Geographical and climatic condition is also very helpful factors for the growth of any civilization. The Indus valley is a very fertile land since Helene period. The Indus River brought flood frequently and keep the soil of Indus valley fertile by silting. Gurdeep Sing studied some pollen cores found from the salt water lakes in Rajasthan and said that during Harappan period this area was more fertile than today and received heavy rainfall. So the fertile soil and favorable climatic condition provided facilities for the rise of the civilization.

Harappa, Mohenjodaro, Kalibangan, Lothal, Dholavira, etc.
were the important Harappan sites founded in the India and Pakistan. Agriculture and trade were the two base of their economy. The Harappan people developed their internal and external trading activity. Agriculture depended on monsoon but the Harapan people developed some artificial means of irrigation like, cannal, wells, reserviors etc.

The Harappan cities were surrounded by the fortification walls. In the archaeological context fortification can be defined as protective or defensive works around the settlement area. The defensive wall may be in any shape like. Rectangular, square, oval, round, parallelogram, octagonal, trapezoid, etc. In Indo-Pakistan subcontinent some of the Early Harappan settlement like many Harappan cities were protected by the fortification wall. Kot Diji, Rehman Dehri, Tarakai Qila, Kohtras, Buthi, Mehargarh VII A, Dholewan, Bhirrana, Balu, Kalibangan, etc. were protected by the fortification wall. Some Harappan cities like Harappa, Mohanjodaro, Kalibangan, Dholavira, Lothal, etc had elaborated fortification wall. Size and shape of the defensive wall vary from site to site. Material and technique were also different in some of the Harappan sites The purpose of the defensive wall was of two folds, one was to protect the settlements in the flood like in modern time the settlement in the flood prone areas are protected from flood by making ring dams or mud bunds and the second objective was to restrict the enemies or invaders. Dimension, Gateways, Bastions, etc. were the important aspects of the fortification. The fortification wall during the Harappan
period also protected the people from the wild animals and the adverse effects of climate.

The Harappan civilization is well known due to its town planning. They developed unique city plan which was unparallel among the contemporary civilization. The Harappan city plan seems to designed by some architect with the help of some geometrical instruments. In Harappan town planning some particular features were followed. In most of the city plan, the citadel was in the west and lower town was to the east of citadel but at some sites like Lothal and Dholavira the citadel was in the southern part of the city. The cities were divided into blocks and sub-blocks by the cardinal orientation of streets and lanes. The streets run north south and east-west directions. All major streets in chanhudaro were oriented in north-east to south-west and north-west to south-east. The lanes were also played an important role. The lanes connect the houses with main streets. The doors of the houses open in the lanes.

Drainage system was considered as hallmark of Harappan town planning. They developed good drainage system in their cities towns. The Harappan drains can be categories into two parts, the public and private drains. The private drains were constructed and maintained by the houses dwellers while the public drains were constructed and maintained by some governmental authority. The sullage of the house drained into the street drain and the street drain joined with large drain which took all the waste water outside of the city. The waster water was
discharged into some water body like dock at Lothal.

The Harappan people constructed many hydraulic structures like Great Bath at Mohenjodaro, the dock at Lothal Reservoirs at Dholavira and wells at different sites. The water management system of the Harappan civilization revealed that this area received scanty rainfall during Harappan period. They constructed some canals for irrigation like the moat was constructed at Kunal and Banawali and a canal was built at Lothal. Sometime the water of the well was also used for agriculture. The dock at Lothal was constructed for trading activity. The dock was connected with sea by a river channel. It also shows that the Harappan developed their trading relations with its contemporary civilization. The trade was carried on by land and sea route.

The Great Bath at Mohenjodaro revealed the aspects of public ceremony. The tank measured approximately 11.7m north-south and 6.9m east-west with a maximum depth of 2.4m. Two wide staircases lead down into the tank, one from the north and other from south. The floor of the tank was water-tight due to finally fitted bricks laid on edge with gypsum plaster. The side walls were also constructed in a similar manner. To make every tank more watertight, a thick layer of bitumen was laid along the sides of the tank and presumably also beneath the floor. The floor slopes down to the south-west corner where a small outlet leads to a bricks drain. Some visitors at Mohenjodaro called it swimming pool. The Harappan people took bath in Great Bath during some
religious ceremony. The water conserved in the tank may be used by the people for domestic purpose but not for drinking.

The wells were the main sources of drinking water for the Harappan people. Michael Janson discovered approximately 700 wells at Mohenjodaro, so he called it the city of wells. Some wells were constructed in the streets and were used by the common people and travelers. There were private wells in most of the houses at Mohenjodaro. Some public wells were found at Kalibangan, Dholavira, Lothal etc. Wedge shape bricks were used to make the well in cylindrical form Harappan people constructed their houses in both sides of the lanes and streets. There were two to five rooms, a courtyard, kitchen and bathrooms or bathing platforms in the houses. The evidences of privy were found in a few houses at Mohnejodaro, harappa and Lothal. It seems that these quarters were constructed by the government authority because they were constructed in same plan, same materials and at same place. The construction of workers quarter shows the quality of the welfare state.

The construction of bead factory at Lothal and Chanhudaro, the coppersmith's workshop at Lothal, the houses of some lapidaries show the features of Harappan industrial complexes. These industries produced surplus goods which were sold into the market and some were exported to the other sites through internal and external trade. Mart was also an important feature of the Harappa cities. The artisans decorate the market with their produced goods. Some evidences of marts were found at
Mohenjodaro, Banwali and Lothal. Some platforms were constructed in the streets which were used to decorate the goods on them.

In the construction of houses different types of material and techniques were used by the Harappan people. The houses at Balu, Banawali, Kalibangan, Lothal, Harappa etc. were constructed with mud-bricks. At Mohenjodaro the houses of common people were constructed with baked-bricks. The dressed and undressed stones were used in the construction of houses at Surkotada. The doors, windows and roofs of the houses were constructed with wood.

The houses and public buildings were constructed on platforms. The platforms were constructed with mud and mud-bricks. The walls of the houses were constructed with a deep foundation. Some partition walls were not interlocked with the main walls of the room in a few houses at Mohenjodaro. Watertight backing technique was adopted by the Harappans in the construction of drains and the water body. It was to increase the strength of the drains and to stop percolation of the water in the ground. The houses and buildings were plastered. The different type of materials was used in the making of plaster. The mud-mortar was commonly used in the construction of houses and buildings. Sometime gypsum and bitumen was also used as mortar.

Harappan people used different type of bonding technique in the construction of buildings. English-Bond was commonly
used by the Harappan people in the construction of buildings. In the modern building the English bond was also commonly used. In this bond header and stretchers are laid in alternate course. The English bond is considered as a strong bond. Flemish Bond was second important bond used by the Harappan people. In this bonding technique the header and stretchers are laid alternatively in the same course. Every header in each course lies centrally over every stretcher of the underlying course. It was not as strong as English-Bond. The wall of a kitchen in DK area at Mohenjodaro was constructed in this bonding technique. In a few walls some other types of brick bond technique like stretcher bond, Header Bond, American Bond Stack Bond, etc. were used by the Harappan people.

Some geometrical instrument were also used by the Harappan people. These instruments were helpful to make angles like compass; some were used to measure length like scale. Scales were found at Mohenjodaro, Lothal and Kalibanga. Plumb-bob were used to make the wall vertically straight. Some model of plumb-bobs was found at Chanhudaro and Lothal.