UNIT 31 ART AND ARCHITECTURE OF DELHI SULTANATE

31.0 OBJECTIVES

In Unit 14, you read about the establishment and consolidation of the rule of the Turkish Sultans in India. The new rulers established a regime that was in some profound respects different from the old. India now witnessed the emergence of a culture which combined elements of both indigenous and Islamic traditions. The most effective and distinct manifestation of this synthetic culture is to be seen in the art and architecture of this period.

After going through this Unit, you should be able to:
- distinguish between the pre-Islamic and Indo-Islamic styles of buildings,
- identify major architectural styles of the period,
- know the traditions of painting prevalent in the Delhi Sultanate, and
- learn the major developments in music during this period.

31.1 INTRODUCTION

Art and architecture are true manifestations of the culture of a period as they reflect the mind and approach of that society. It is here that the ideas and techniques of a society find visual expression. The advent of the Turkish rule in India is significant in more than one respect: While it gave rise to a new socio-political system which you read about in Units 29 and 30, it also marked the beginning of a new expression in art. The style of architecture that evolved during this time is called Indo-Islamic.

Unlike architecture, the art of painting as practised in the Delhi Sultanate is not properly documented. We know that calligraphy and book-illumination in the Islamic world had achieved supreme heights by the close of the 12th century; there also existed a developed tradition of figural murals in the Ghaznavi kingdom. Possibly the same tradition was carried to Delhi by the early Turkish Sultans where it flourished in the 13th and 14th centuries.

31.2 ARCHITECTURE

The most important source for the study of architecture is the surviving remains of buildings themselves. Though these enable us to grasp architectural techniques and
styles peculiar to our period, it offers little help in understanding other related aspects of architecture such as the role of the architects and the drawings and estimates and accounts of the buildings.

31.2.1 New Structural Forms

i) Arch and Dome: On a careful reading of the reports prepared by General Alexander Cunningham of archaeological sites and remains (Reports of the Archaeological Survey of India, vols. I-XXIII, Simla, Calcutta, 1865-77) in Northern India, we observe that the incidence of masonry buildings—including civilian housing in towns—increases significantly after the 13th century. This was primarily possible due to the use of lime-mortar as the basic cementing material about which you have already read in Unit 22. The building of true arch required stones or bricks to be laid as voussoirs in the shape of a curve and bound together firmly by a good binding material. This binding material was lime-mortar. (figure 1 gives the diagram of an arch.)

![Diagram of an Arch](fig. 1)

The result of the introduction of the new technique was that the pre-Turkish forms; lintel and beam and corbelling, were replaced by true arches and vaults and the spired roofs (shikhara) by domes. Arches are made in a variety of shapes, but in India the pointed form of the Islamic world was directly inherited. And sometime in second quarter of the 14th century, another variant of the pointed form, the four-centred arch, was introduced by the Tughluqs in their buildings. It remained in vogue till the end of the Sultanate. (These forms have been illustrated in figure 2.)

![Diagram of Various Arches](fig. 2)
The pointed arch was adopted in the Islamic world quite early due to its durability and ease of construction. The usual method of raising a pointed arch was to erect a light centering and place one layer of bricks over it. This layer supported another thin layer of flat bricks over which radiating voussoirs of the arch were fixed in mortar. These two bottom layers of brick-work would, if needed, act as permanent shuttering for the arch (as shown in Figure 3). It may be noted here that the employment of bricks instead of an all-wood centring was a feature typical of regions deficient in reserves of wood such as West Asia and even India.

But the construction of dome demanded special techniques. The problem was to find a suitable method for converting the square or rectangular top of the walls of the room into a circular base for raising a spherical dome. The best way to overcome this problem was to convert the square plan into a polygon by the use of squinches across the corners (shown in figure 3). Later, in the fifteenth century, stalactite pendentives came to be used for the same purpose. (Shown in photo 1: Bara Gumbad Mosque, New Delhi.)

ii) Building Material: It is a curious fact that there are very few instances of early Turkish buildings in India where newly quarried material has been employed by the architects. The fashion was to use richly carved capitals, columns, shafts and lintels from pre-Turkish buildings. In India, towards the beginning of the 14th century when the supply of such material had exhausted, buildings were raised by using originally quarried or manufactured material.

In the masonry work, stone has been used abundantly. The foundations are mostly of rough and small rubble or, wherever it is available, of river boulders, while the superstructure is of dressed stone or roughly shaped coarsed stonework. However, in either case, the buildings were plastered all over. Percy Brown (Indian Architecture: Islamic Period, Bombay, 1968) has noted that in the buildings of the Khalji period a new method of stone masonry was used. This consisted of laying stones in two different courses, that is headers and stretchers. This system was retained in subsequent buildings and became a characteristic of the building technique of the Mughals.

The material commonly used for plastering buildings was gypsum. Apparently lime-plaster was reserved for places that needed to be secured against the leakage of water, such as roofs, indigo-vats, canals, drains, etc. In the later period, i.e. around 15th century, when highly finished stucco work became common, gypsum mortar was preferred for plaster work on the walls and the ceiling (as shown in photo 2 below).
iii) Decoration: Decorative art in the Islamic buildings served the purpose of concealing the structure behind motifs rather than revealing it. Since the depiction of living beings was generally frowned upon, the elements of decoration were, in most cases, limited to:

a) calligraphy, b) geometry, and c) foliation.

It was by their manipulation that a rich and sumptuous effect was obtained in the Sultanate buildings. But characteristically enough no one type of decoration was reserved for a particular type of building; on the contrary, these pan-Islamic decorative principles were used for all kinds of buildings in the Delhi Sultanate.

Calligraphy is an important element of the decorative art in the buildings of this period. The Qur'anic sayings are inscribed on buildings in an angular, sober and monumental script, known as kufi. They may be found in any part of the building-frames of the doors, ceilings, wall panels, niches etc., and in variety of materials—stone, stucco and painting (See the photos 3 & 4 for specimens of stone and stucco calligraphy respectively).
Geometric shapes in abstract form are used in these buildings in a bewildering variety of combinations. The motifs indicate incorporation of visual principles: repetition, symmetry, and generation of continuous patterns. It has been suggested by Dalu Jones (Architecture of the Islamic World, ed. George Michell, London, 1978) that the generating source of these geometric designs is the circle, which could be developed into a square, a triangle or a polygon. These forms are then elaborated by multiplication and subdivision, by rotation and by symmetrical arrangements (see, for example, photo 2 supra).

Of the foliations, the dominant form of decoration employed in Sultanate buildings, is the arabesque. It is characterised by a continuous stem which splits regularly, producing a series of leafy secondary stems which can in turn split again or reintegrate into the main stem. The repetition of this pattern produces a beautifully balanced design with a three dimensional effect (see figure 4 and photo 5).

Check Your Progress 1

1) What was the main reason for a significant increase in masonry buildings after the 13th Century?

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2) Identify the problem to make a dome.

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3) What were the main elements of decoration in the Sultanate architecture?

31.2.2 Stylistic Evolution

The purpose of the discussion here is to provide you with a general outline of the evolution of the Indo-Islamic architectural style under the Sultans of Delhi and to highlight the features that characterise its more prominent phases.

i) The Early Form

The history of Indo-Islamic architecture proper commences with the occupation of Delhi by the Turks in A.D. 1192. The Tomar citadel of Lal Kot with its Chauhan extension, called Qila Rai Pithora, was captured by Qutbuddin Aibak. Here he began the construction of a Jami Masjid which was completed in 1198. According to an inscription on the mosque it was known as Quwwatul Islam and was built from the wreckage of twenty-seven Hindu and Jain temples demolished by the conquerors. Again, in 1199, an expansive screen with lofty arches was raised across the entire front of the sanctuary of the mosque. In both these constructions, the hand of the local architect is quite evident. The lintels, carved-columns and slabs, have been used liberally by only turning their carved sides inwards or using them upside down. The arches of the screen have been built by employing the method of corbelling. And the ornamentation of the screen, is emphatically Hindu in conception (see photo 16 below).

However, the borrowed elements of Hindu architecture were soon discarded and relatively little was retained by the maturing Indo-Islamic style. In later buildings of this phase, such as Qutab Minar (built 1199-1235), Arhai Din Ka Jhoupra (built c. 1200) and Iltutmish's tomb (completed 1233-4), though corbelling could not be replaced as the principal structural technique, decoration became almost fully Islamic in detail. In this connection, the principles employed in the construction of the domical roof of Iltutmish's tomb (built 1233-4, not extant now) are also of great interest. Though the dome was raised with the help of corbelled courses it was supported on squinches built at the corners of the square chamber (shown in photo 7). Here perhaps is the earliest attempt, says Percy Brown, of solving the problem of
The culmination of the architectural style designated by us as the Early Form was the mausoleum of Balban built around 1287-88. It is in ruins now but occupies an important place in the development of Indo-Islamic architecture, as it is here that we notice the earliest true arch. (Eastern arch shown in Photo 8).

ii) The Khaljis

With their architecture, as revealed in Alai Darwaza (built 1305) at the Qutub complex, and the Jamat Khana Masjid (built 1325) at Nizamuddin, a marked change in style appears. In the evolution of Indo-Islamic architecture, this phase occupies a key position as it exhibits a distinct influence of the Seljuq architectural traditions (a Turkish tribe ruling over Central Asia and Asia Minor in 11-13 century) as also certain salient features of composition which were adopted in the succeeding styles.

The characteristic features of this phase may be listed below:

a) Employment of true arch, pointed horse-shoe in shape (photo 9).

b) Emergence of true dome with recessed arches under the squinch (photo 10).
c) Use of red sandstone and decorative marble reliefs as new building materials (photo 11).

d) Appearance of 'lotus-bud' fringe on the underside of the arch — a Seljuq feature (see photo 12).

e) Emergence of new masonry-facing, consisting of a narrow course of headers alternating with a much wider course of stretchers (see 31.2.1) — again a Seljuq feature.

In addition, the decorative features characterised by calligraphy, geometry and arabesque now became much bolder and profuse.

iii) The Tughluqs

A new architectural style came into vogue in the buildings of this period. Judging from the remains, only the first three rulers of this house appear to have been interested in the art of building. However, the architecture of this period can be divided into two main groups. To the first group belong the constructions of Ghiyasuddin and Muhammad Tughluq, and the other to those of Feroz Tughluq.

The general features of the Tughluq style of architecture are listed below:

a) Stone rubble is the principal building material and the walls are in most cases plastered.

b) The walls and bastions are invariably battered, the effect being most marked at the corners (see photo 13).
c) A hesitant and possibly experimental use of a new shape of arch—the four-centered arch—necessitating its reinforcement with a supporting beam. (see photo 14). This arch-beam combination is a hallmark of the Tughluq style. The pointed horse-shoe arch of the preceding style was abandoned because of its narrow compass and therefore the inability to span wider spaces.

![Photo 14](image)

d) Emergence of a pointed dome with clearly visible neck in contrast with rather stifled dome of the preceding style. (see photo 13 supra).

e) Introduction of encaustic tiles as an element of decoration in the panels of the buildings.

f) Emergence, in the tombs of this period, an octagonal plan which came to be copied and perfected by the Mughals in the 16th-17th century. An additional feature was the element of reduced ornament, confined mostly to inscribed borders and medallions in spandrels executed in plaster or stucco.

iv) The Final phase

Within a decade of the death of Feroz Shah Tughluq (1388), the Sultanate became politically unstable, and in 1398 was sacked and plundered by Timur. However, some semblance of central authority remained with the two succeeding dynasties of the Saiyyids and Lodis, although they ruled over a greatly shrunken Sultanate of Delhi between 1414 and 1526. A large number of tombs were built in and around Delhi so much so that over a period of time the area around Delhi looked like a sprawling qabristan (graveyard).

Yet some of these structures are important from architectural point of view and can be considered as heralding a distinct style. The more important of these tomb-buildings took two separate forms, the distinguishing features of which are given below:

a) Mausoleums designed on an octagonal plan incorporating the following elements:
   - main tomb-chamber surrounded by an arched verandah.
   - one storey high.
   - verandah with projecting eaves supported on brackets

b) The other type was built on square plan. These were characterised by the following elements:
   - absence of verandah around the main tomb-chamber.
   - exterior comprised of two, and sometimes three storeys.
   - absence of eaves and supporting brackets

There is an original treatment of coloured tile decoration in these buildings. It is set sparingly in friezes. In addition, there are intricately incised surfaces of plaster.
The end of the Delhi Sultanate came in 1526 with the defeat of last of the Lodi Sultans at the hands of the Mughal invader, Babur. This also signalled an end of the Sultanate style of architecture, which had begun showing signs of stagnation in the 15th century.

31.2.3 Public Buildings and Public Works

You must have noticed that in our discussion of the development of the Sultanate architecture in the preceding two Sub-sections, 31.2.1 and 31.2.2, we made references mostly to royal structures like palace-citadels, tombs or mosques. This, however, is not to suggest that other kinds of buildings were non-existent or that they were insignificant.

Contrary to the popular opinion that the number of structures other than royal buildings was abysmal, we in fact notice that such structures far outnumber royal buildings. The majority of these buildings comprised sarai, bridges, irrigation-tanks, wells and baoli, dams, kachehri (administrative buildings), prison-houses, kotwali (police-stations), dak-chauki (post-stations), hamman (public baths), and katra (market places), etc. Since almost all these types were intended for public and civic purposes, we group them collectively under public buildings and public works. They were available to the general public regardless of their religious affiliations.

Sarai is perhaps the most conspicuous of these public buildings. It was introduced in India by the Turks in the 13th century. The earliest mention of the existence of sarai is from Balban’s time (1266). Among late rulers both Muhammad Tughluq and Feroz Tughluq are known to have built a large number of sarais in Delhi as also along the major land-routes of the Sultanate. The main features of these sarais may be listed thus:

- Square or rectangular disposition, enclosed on all four sides by masonry walls, with entry through one or sometimes two gateways.
- Series of rooms fronted by small vaulted spaces along all the four sides inside the enclosure. Warehouses in the corners of the enclosure.
- Existence of a small mosque and one or more wells in the open courtyard within the enclosure. (These features may be seen in figure 5 and in the plan of a sarai of Sher Shah’s time).

Fig. 9

Bridges were another important category of public buildings. However, only small and medium sized rivers were provided with masonry bridges. Major rivers such as the Ganga and the Yamuna were provided with bridges made of boats. We are fortunate in having at least two masonry bridges made of boats. We are fortunate in
having at least two masonry bridges of this period surviving even today. One is located at Chittorgarh over the Gambheri river (shown in photo 15 below). The other was built over Sahibi, a tributary of Yamuna, at Wazirabad Delhi (shown in photo 16).

Sarais and bridges are only the two most common specimens from a rather rich and miscellaneous order of public buildings of the Sultanate period. Weirs and step-wells, too, are a part of the Delhi Sultanate architecture. For example, gandhak ki baoli built by Iltutmish at Mehrauli (Delhi) is one of the step-wells.

Check Your Progress 2
1) Mark (✓) or (×):
   i) The arches in the screen of Quwwatul Islam Masjid are corbelled.
   ii) Dome in Iltutmish's tomb was raised by placing crossbeams at the corners of the tomb-chamber.
   iii) Openings in Balban's tomb are corbelled.
2) List three main features of the Khalji architecture.

3) Answer each of the following in one line.
   i) Why was pointed horseshoe arch abandoned in the Tughluq period?
   ii) How are the walls and bastions of Tughluq period different from the preceding structures?
   iii) What difference do you notice in the building material of the Tughluq buildings?
4) Write a note on the distinctive features of the Saiyyid and Lodi mausoleums.

5) Define a public building and list some of the important public buildings of the Delhi Sultanate.

31.3 PAINTING

The history of painting in the Sultanate period is obscure compared with its architecture. This is due primarily to the non-availability of any surviving specimens for at least the first hundred years of the establishment of the Delhi Sultanate.

Equally surprising is the absence of illuminated books, an art carried to supreme height in the Islamic world by 1200. However, the researches during the last 20-25 years have unearthed new and some crucial evidence, forcing the scholars to change their opinion radically. We now know that not only book illumination but murals too were executed during the Sultanate period. The art of painting may thus be divided into the following three categories each of which will be discussed separately.

31.3.1 Literary Evidence for Murals

The closest view that one may have of the murals as a flourishing art form during the rule of the Delhi Sultans is through a large number of literary references occurring in the chronicles of this period. These have been compiled and analysed by Simon Digby ('The Literary Evidence for Painting in the Delhi Sultanate', Bulletin of the American Academy of Benares, Vol. I, 1967, 47-58).

The earliest reference to murals in the Sultanate period is in a qasida (Tabaqat-i Nasiri) in praise of Iltutmish, on the occasion of the gift of Khilafat from the Caliph in 1228. The verses in this composition make it clear that human or animal figures were depicted upon the spandrels of the main arch raised to welcome the envoy of the Caliph.

The most important single reference to painting in the Delhi Sultanate occurs in the context of un-Islamic observances of earlier rulers inviting a ban by Feroz Tughluq (Tarikh-i Ferozshahi by Afif). It indicates the existence of a continuous tradition of figural painting on the walls of the palaces of Delhi, which was sought to be banned by Feroz Tughluq.
This tradition of painting was not confined to the murals alone. In a reference relating to the entertainment parties thrown by Qutbuddin Mubarak Khalji (1316-20), mention is made of a profusely painted open-sided tent: The decorations would therefore appear to be on painted cloth (Nuh Siphr by Amir Khusrau).

In contrast, there did survive a tradition of wall painting in the houses of the common people, especially the non-Muslims. It is testified by:

- a stanza from a 14th century Hindi poem Chandayan written by Maulana Daud in 1379-80, which describes the painted decoration of the upper rooms of the house were Chanda, the leading lady of this poem, sleeps with her female companions.
- an actual painting from one of the illustrated manuscripts of this poem belonging to the 15th century and showing the bedchamber of Chanda, on the walls of which are painted scenes from the Ramayana (see photo 17).

31.3.2 The Quranic Calligraphy

Calligraphy was the most revered art in the Islamic world, and was used as a decorative feature both on stone and on paper. In the hierarchy of craftsmen, a calligrapher was placed above the illuminator and painter. However, the calligraphy of the Quran became one of the foremost forms of book art, where copies of Quran were produced on a majestic and expansive scale.

The earliest known copy of the Quran is dated 1399. It was calligraphed at Gwalior, and has a variety of ornamental motifs, derived both from Iranian and Indian sources. (Two pages of this manuscript are shown in photo 18). The geometrical frontispiece of this manuscript seems to be in the Sultanate style and suggests the following as prominent features of the Delhi ateliers in the 14th century:

- The work produced here is in line with the Iranian tradition.
- The script used in the headings and inscriptive panels of the Quran is invariably kufi.
- The illumination of geometrical frontispieces was the speciality of this school.
The state of book-art in the 15th century, under the Saiyyid and Lodi dynasties, remained a sad shadow of its former self as it became incapable of supporting artistic endeavour on a large scale. The initiative seems to have been wrested by provincial dynasties.

31.3.3 Manuscript Illustration

Manuscript illustration in the Sultanate period is a hotly debated and disputed subject. There is very little concurrence among scholars on terminology and provenance. Thus, deciding the traits of Sultanate manuscript illustrations is a cumbersome job. On the contrary, though a good number of illustrated manuscripts in Persian and Awadhi from the period between 1400 and the advent of the Mughals are now known, some of these manuscripts appear to have been produced at provincial courts. However, there is a distinct, although small, group of manuscripts which was probably not connected with any court. They seem to have been produced for patrons, presumably independent but located somewhere in the Sultanate. They have sometimes been termed as representing a 'bourgeois' group and are attributable to the period 1450-1500. Given below are brief notes on two of these manuscripts forming the 'bourgeois' group.

Hamzanama (Berlin)

This manuscript is dated to about 1450 and depicts the legenedy exploits of Amir Hamza, one of the companions of the prophet (one leaf shown in photo 19).
Chandayan (Berlin)

It is datable to 1450-70 and illustrates the romance of two lovers Laur and Chanda. It was composed in the Awadhi dialect of Hindi by Maulana Daud of Dalmau near Rai Bareilly in Uttar Pradesh in 1389 (one leaf shown in photo 20).

31.4 MUSIC

The development of music as an art form in Delhi Sultanate took a back seat compared with the growth of architecture and painting. Moreover, the history of music during this period suffers from a serious handicap—the lack of documentation. Historical references are scattered and scanty and most of the modern day writings are speculative rather than historically substantive. They are replete with fables and legends about music in the Sultanate period.

The 14th century is perhaps the most important period in the history of the Delhi Sultanate from the point of view of music. That music in some form was practised in the courts of the early Sultans is, however, not improbable. Kaiqubad had built for himself a magnificent palace at Kilugarhi. The courtly revels included dancing and singing of Persian and Hindi songs by beautiful girls. But it was Amir Khusrau who has left an enduring mark on the music not only of the Sultanate but of India as a whole. Amir Khusrau was the disciple of the great sufí saint Shaikh Nizamuddin Aulia of Delhi. He was also the court poet of Alaaddin Khalji who was himself very fond of music. The genius of Amir Khusrau in the sphere of music was mainly utilised in innovating new compositions as well as in assimilating different forms of music prevalent in his time. He is credited with having introduced:

- the qaww.al mode of singing into the countryside for the first time.
- several of our modern rags like Zilaph, Sazgiri and Sarparda, etc., produced by combining Persian and Indian tunes.
- Khayal form of singing by abandoning the traditional dhrupad.
- a new musical instrument called sitar by combining the old Indian vina and the Iranian tambura.
• modifications in the conventional percussion instrument mridang to bifurcate it into two and call them tabla.

The changes introduced by Amir Khusrau had far-reaching social consequences in bringing together people of two divergent creeds.

Check Your Progress 3

1) Describe the source for the tradition of wall-painting in the Delhi Sultanate.

2) When and where was the earliest known copy of Quran made?

3) Define ‘bourgeois' group of paintings.

4) Give a list of some of Amir Khusrau’s major musical achievements.

31.5 LET US SUM UP

On the basis of the features discussed above, it is evident that the development of art and architecture in the Delhi Sultanate followed an uneven pattern. While growth of
architecture occupied the paramount position, other art forms like painting and music did not get equal attention. Individual initiative, a full-blooded support for their growth is found missing. Much of the artistic impulse came to be expressed in architecture enriching it both structurally and stylistically. It also gave rise to a rich heritage of civic buildings—the public buildings and public works. Informed interest in these constructions is relatively recent, but they must claim a place in any comprehensive survey of Indo-Islamic architecture.

- Much of this architecture appears within the urban setting, the main building types being mosques (masjid), tombs (maqbara), palace-citadels as well as structures of public utility, such as sarais, bridges, step-wells, and water reservoirs.
- There are no specific architectural forms for specific functions. Most can be adopted for a variety of purposes. As an illustration of this feature one could think of the four-cloistered courtyard structure which served equally well as palace, mosque, sarai and madrasa.
- An important element of this architecture is the emphasis on the enclosed space generally defined by walls, arcades and vault.
- The decoration in the architecture is mostly of a kind which suggests spaces existing beyond the decorative frames—atec tonic in nature. Its chief elements are arabesque, geometry and foliation, the depiction of animate forms was popularly thought of having been prescribed under Islam. But there is nothing in the Quran to support this popular view.

A lively tradition of wall-painting deriving inspiration from the Ghazanavid kingdom survived in Delhi Sultanate up to at least 1350. It had a wide repertory, the subjects depicted ranging from the themes of the Mahabhara and Ramayana down to popular folk-tales. Another important tradition that grew during this period was of illuminated manuscripts. But it was independent of court patronage and for that reason the manuscripts have been termed as ‘bourgeois’. Manuscript illustration and the art of writing the Quran flourished only till Timur’s invasion. The influence of Iranian School was quite prominent. This tradition died soon after 1398—the year of the sack of Delhi. But it sprouted and flourished in the provincial courts.

- A tradition of figural painting in the form of murals and painted cloth during the 13th and 14th centuries derived mainly from the Ghaznavi kingdom.
- A simultaneous tradition of the Quranic calligraphy in Kufi script which lasted up to 1399—till Timur’s sack of Delhi. This kind of painting developed with the introduction of paper in India.
- Another tradition was that of illustrated Persian and Awadhi manuscripts originating probably at the beginning of the 15th century and growing independently of the imperial court.

The history of music in the Delhi Sultanate suffers from lack of reliable evidence. The only definite information relates to the musical genius of Amir Khusrau and a list of some prominent musical instruments given by Ibn Battuta.

### 31.6 KEY WORDS

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<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Arcade</td>
<td>a range of arches carrying a roof or other superstructure</td>
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<tr>
<td>Ashlar</td>
<td>masonry walling formed of dressed stones</td>
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<tr>
<td>Batter</td>
<td>a slight inward inclination of a wall from its base upwards</td>
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<tr>
<td>Buttress</td>
<td>a vertical mass of masonry projecting at intervals from the external face of wall</td>
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<tr>
<td>Centering</td>
<td>a temporary support facilitating the construction of an arch</td>
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<tr>
<td>Eaves</td>
<td>the lower edge of a sloping roof, overhanging the face of the wall</td>
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<tr>
<td>Mural</td>
<td>painting on a well</td>
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<tr>
<td>Parapet</td>
<td>a low wall around the roof</td>
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Spandrel: space between two adjacent arches
Stucco: designing in plaster.

31.7 ANSWERS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1
1) Introduction of arcuate technique and lime-mortar. See Sub-sec. 31.2.1
2) See Sub-sec. 31.2.1
   i) Cross-beams at the corners
   ii) Squinches
   iii) Pendentives
3) Arabesque, geometrical designs, and foliation. See Sub-sec. 31.2.1

Check Your Progress 2
1) i) √
   ii) ×
   iii) ×
2) See Sub-sec. 31.2.2 ii
3) i) Because of its inability to cover wide areas.
   ii) They are battered.
   iii) They use stone-rubble and plaster to cover the surfaces.
4) See Sub-sec. 31.2.2 iv
5) See Sub-sec. 31.2.3

Check Your Progress 3
1) See Sub-sec. 31.3.1
2) In 1399 at Gwaliot
3) See Sub-sec. 31.3.3
4) See Sec. 31.4
1. Quwwat-ul Mosque, c. 1197 A.D., New Delhi

2. Qutub Minar, A.D. 1199, New Delhi

3. Ilutmish's Tomb, c. 1235 A.D., New Delhi

4. Gandhak-ki Baoli, Ilutmish's reign (1210-36), New Delhi

5. Balban's Tomb, c. 1280 A.D., New Delhi
6. Alai Darwaza, A.D. 1305, New Delhi

7. Setpala, Muhammad Tughlaq's reign (A.D. 1325-51), New Delhi

8. Begampuri Masjid, c. 1370 A.D., New Delhi
